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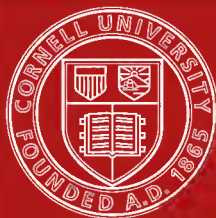
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Our colonial curriculum, 1607-1776.



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# Our Colonial Curriculum

1607-1776

BY

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## OUR COLONIAL CURRICULUM

On the opposite page appears a table of our collegiate studies in colonial days. A bare name does not always indicate the idea intended to be conveyed. Especially easy is it for a misconception to arise when we follow the history of a term. It was soon seen that such expressions as Latin, arithmetic, logic, meant something quite different educationally then from what they mean now. So the attempt is made in the following pages to indicate what the different subjects in education then implied. The enquiry was broadened beyond the limits indicated by the table opposite so as to attempt to cover the entire course from infancy to graduation in college.



COLLEGIATE STUDIES IN OUR COLONIAL PERIOD.

	<i>17th Century.</i>	<i>18th Century.</i>
Greek—	Translating; prose composition; grammar; Testament.	Translating; prose composition; grammar; Testament; Greek catechism.
Latin—	Used as medium of communication.	Translating; composition and grammar.
Semitic—	Hebrew — Translating prose composition, grammar; Chaldee, elementary; Syriac, elementary.	Hebrew — Translating, prose composition, grammar.
Mathematics—	Arithmetic; geometry.	Arithmetic; geometry.
History—	History.	History.
Philosophy—	Logic; ethics.	Logic; ethics.
English—	Rhetoric; composition; oratory (disputes); grammar.	Rhetoric; composition; oratory (disputes); grammar.
Political Science	Politics (with ethics).	Politics (with ethics).
Physics—	Physics (germs of subject of to-day).	Elements (as term "physics" is understood nowadays).
Bible—	New Testament; theology; Old Testament.	New Testament (in Greek); theology; Old Testament (expounded).
Romance Languages—		French, elementary.
Astronomy—	Astronomy.	Astronomy.
Botany—	"Nature of plants."	Elements.



# OUR COLONIAL CURRICULUM

## CHAPTER I.

### ELEMENTARY COURSE.

To-day science dominates our schools. Our colonial ancestors studied and taught in an atmosphere of religion which they had inherited from the middle ages. For centuries the pedagogic aim had been to point the road to Heaven. All training, even physical, was centered upon this thought. "Care for your body, for the soul's sake. Care for the world for the body's sake." Thus solemnly enjoined a fifteenth century teacher. The king in his court equally felt the awful responsibility. Charlemagne, who towers so high in the medieval background, commanded his subjects "to apply yourselves with perseverance \* \* \* so that you may be able to penetrate with greater ease and certainty the mysteries of the Holy Scriptures." The ecclesiastical hand was at the helm, and the church formulated the curriculum and fixed the purpose of the different branches. The moulding of the growing intellect through all Christendom was in the charge very largely of the priesthood. The Jesuits had schools wherever the Bible held sway, numbering the pupils by the hundred thousands, before our forefathers got a firm footing on this side of the Atlantic. Men were fashioned and inspired for the gown, the robe and the cassock. Learning was for the preparation of this special class, and the student was looked on as one set apart, of the order of Melchizedek. The great leaders in theory and the most thorough reformers in practice, still were most anxious to show the path to the other world. Comenius, one of the brightest stars in educational history, wanted children to express devotion with every bodily movement of the eyes, hands, feet, shadowing forth reverence and adoration for

the invisible Majesty. The Holy Scripture must be the alpha and omega of all instruction, "the governing subject in the whole scholastic system."

All life converged to an apex, everything was subordinate to the word of God. Education became a matter of authority. For ages dead memory was the only faculty much cultivated. The language of the great source of knowledge must be graven on the brain. Truth must be accepted as the deliverance of omniscience. Individuality, originality, must be discouraged, while the capacity for receiving and believing at the utterance of his preceptors was strengthened and deepened day by day, in every hearer at the desk. Almost from the days of the Greeks, his duty was to accept what his master told him. In time, it is true, some license of opinion was allowed, but only within the rigid limits set by these same authorities. There was in all this labor little food for the mind, but there was hardy discipline for the memory and considerable sharpening of the intellect. Thousands of miles eastward, among a people often the opposite of ourselves in view and action, there was a duplication of this spirit, though there was no communication of methods from one to the other. Confucius, the mighty captain of the orient in ethics and pedagogics, had laid the foundation for a similar training in China. "He taught letters, ethics, devotion of soul, and truthfulness," but all as a sodden lift of memory, unrelieved by new ideas, with endless reproduction of notions handed down for generations.

But man's brain like his stomach, revolts at monotony. Protests arose against this crushing crust of tradition and precedent. The rule of faith was disturbed and the sanctity of the custom was assailed. But the firm rein was only relaxed, a little play allowed but still dominion remained. At the shock of Arab criticism, questionings arose, and old statements were keenly scrutinized for their accurate meanings. Especially was the doctrine of the Trinity acutely

analyzed and tested, and from that beginning came forth the thirst for examining the ground work of the principles so long undoubted, but the fundamental tenets of Christianity were unshaken, the terms of the Bible were weighed and examined but on the premises that the whole book was an act of inspiration. Comparison and investigation went on under that protection, with the object of discovering the true construction. A harassing, torturing road was it for the mind, seeking with pain and agony to reconcile contradictions, to make all fit in with the reason. A tangled mass of doubt and limited freedom of inquiry, a mixture of emotion and logic, energy bound in fetters—that led Germany's poet a century ago to recreate and epitomize the whole realm in the mouth of one of his characters: "I have now alas! thoroughly, with ardent care, studied philosophy, jurisprudence, medicine, and, the more's the pity, also theology! And now I stand here, poor fool, and am as wise as I was before."

#### RELIGION THE KEYNOTE IN OUR COLONIAL EDUCATION.

This tiresome tangle of cross purposes and baffled spontaneity crossed the Atlantic with the first wanderers, clinging to them like a grim spectre. John Locke, who comes the nearest to penning an educational classic in the English tongue, drew up a stilted constitution for one of our southern colonies which was ignored, but he struck the basic chord for our schools then, when he said that Heaven is "our great interest and business," and "happiness in the other world" is the spur for effort here. The Massachusetts legislature of course knew nothing of these sentiments, but they incorporated the spirit of them in one of their measures of education, in 1647, when they ordained that schools should be maintained in order to thwart the "chief project of the old deluder Satan to keep men from the knowledge of the Scriptures," otherwise they fear "the

true sense and meaning" might be clouded by "false glosses of saint seeming deceivers." Three years later their brethren in Connecticut repeated this caution against that devil that was so personal to believers then. The local body took up the refrain and were almost nervous to see that the young were brought up in the nurture and admonition of the Lord, because fruitless must man's endeavors be without the blessing of God. When poverty was too great, they petitioned the home land for aid, lest their offspring should not imbibe the principles of Christian religion. If they could get that the rest caused but little uneasiness. "The Bible and figgers is all I want my boy to know," said a pious Dutch farmer and his voice sounded for many of his neighbors. It was the same whether they came from England, from Holland, from Sweden, whether they were in New England or south of the Potomac.

In ethical importance the teacher stood next to the preacher. In fact he often discharged the other's functions. His duties were detailed for him and a strict agreement bound him to certain things. In a general way here is what he had to do in New England:

1. To act as court messenger.
2. To serve summonses.
3. To conduct certain ceremonial services of the church.
4. To lead the Sunday Choir.
5. To ring the bell for public worship.
6. To dig the graves.
7. To take charge of the school.
8. To perform other occasional duties.<sup>1</sup>

Still more minute was the understanding in the locality of New York among a different people when he was directed to have four prayers daily from the catechism by his class, to teach the common prayers and the catechism on Wednesdays and Saturdays so as to have all well prepared for the

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<sup>1</sup> Boone, *Education in the United States*, page 12.

Sunday lessons. In fine the bulk of his agreements, in some cases three-fourths of the articles, related to religion, but scarcely a syllable would be inserted on education proper. If he could be a sexton and a "Psalm setter," could read the sermon in the absence of the pastor, toll the bell, intone prayers and assist at churchly ceremonials then he was fitted to be a school teacher.

One of his greatest obligations was to catechise the children on the sermon of the previous Sunday and require them to rack their little skulls for the text, for the subject, and for most of the moving passages. Is it to be wondered at that the calling was loathed, and that tramps and peddlers, the very driftwood of society, men of broken fortunes, discharged soldiers, often presided in the school house? But some rugged souls went through the mills and survived as men. There is one notable example in the Boston schoolmaster, Ezekiel Cheever, whose reputation shines down to the present. Dying just before the eighteenth century, nearly at the age of one hundred, he had been pioneer and patriarch, "the typical man, the man of prayer, the man of faith, the man of duty, the man of God," one of "Cromwell's men."<sup>2</sup> In him were linked piety and scholarship. His Latin grammar ran through many editions but paradigms and syntax were the small things in life to him by the side of the eternal welfare of those under his charge.

#### THE BIBLE THE REAL PRIMER THEN.

Such men were steeped in the Scripture. It was an inheritance from the early ages of Christianity. For the centuries past the psalter had been the chief book in the hands of beginners. One of the most popular editions that crossed the ocean was by Sternhold and Hopkins, fervent men who

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<sup>2</sup> Philips Brooks, *Oration on Cheever*, page 28.

in the latter part of the sixteenth century were filled with resentment against the loose amorous songs of the day and tried to substitute the glowing piety of the psalmist. The solemnity of their task would hardly prevent levity to-day if the schools were put to reciting such lines as these:

"Our soul in God hath joy and game"  
"Divide them Lord and from them pull  
"Their devlish double tongue."<sup>3</sup>

But the words of Israel's chief singer were not the only portions used for education. Church councils had centuries before decreed that pupils should be taught the true faith and doctrine as the foundation of all instruction. Luther though fighting that organization, retained this conception. His primer also had the Credo, paternoster, and other portions of the Bible. Melanchthon added the Sermon on the Mount and other selections from the New Testament but his humanistic preferences also incorporated a number of pages from Greek writers. Locke, though not an official churchman, followed in the same path and wanted the Lord's Prayer, the Creed, and the ten commandments to be learned by heart. His common sense refused large portions especially of the Old Testament as unsuited for the youthful capacity, but he asked for a "short and plain epitome \* \*

\* the chief and most material heads." Under the sympathetic gentle hands of the few women who taught in our early colonial days these rigid truths were softened into stories and moral precepts were inculcated by personal narratives. Skillfully were principles graven on the minds of little girls by having them work religious samplers, often in verses of "dolorous pitch" as in one quoted by an investigator:

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<sup>3</sup> Mrs. A. M. Earl has a very humorous description of this book in chapter 12 of *Puritan New England Sabbath*.



"The winter tree resembles me  
 Whose sap lies in its root  
 The Spring draws nigh, as it so I  
 Shall bud, and hope, and shoot."<sup>4</sup>

The first textbooks could hardly be anything else than infusions of this spirit. In fact the Hornbook and the New England Primer were scarcely more than adaptations from the Bible, having the Lord's Prayer, the commandments, and other more favorite passages. The New England Primer, practically the only book that younger students used, was a "Vade Mecum" of religion, "the little Bible of New England." It has all the atmosphere of Sunday services. Its pages are sprinkled with such terms as "abomination," "justification," "pray to God," "hate lies." Texts and proverbs are found in it about a wise son and "give me neither poverty nor riches." As an aid to the memory, perhaps, versification is invoked and such couplets as these were recited:

"Christ crucified  
 For sinners died"  
 "The deluge drowned  
 The Earth around."

A most touching one that comes down even to the present begins:

"Now I lay me down to sleep."

The saturation was not exhausted even with the multiplication of textbooks. The first prosaic "spelling books" were composed of extracts transferred bodily from the Bible. Out of 168 pages of Benezet's copy 20 pages were given to spelling proper, the rest being absorbed from the Bible and moral teachings. He was very frank and plainly said in his preface that his aim was to turn the youthful mind to "early sentiments of piety and virtue." This em-

<sup>4</sup> R. R. Reeder, *Historical Development of School Readers*, page 26, Vol. 8, of Columbia University contributions to Philosophy, Psychology, and Education, 1900.

phasis transmitted itself through the classes and through the years. Near the middle of the eighteenth century reminiscences could be heard of the Bible having been used as a reading book even for advanced pupils.<sup>5</sup> A later witness is the great transcendentalist who quotes the case for us down almost to the nineteenth century:

"On Saturdays forth came, yellow and dim,  
New England's primer; and the scholars all  
Lord's Prayer recite, commandments, cradle-hymn,  
And fatal consequence of Adam's fall."<sup>6</sup>

When young pens then as now took to diaries they naturally tended to the sad and doleful, to questions of conscience and sacred duty. They are very tiresome reading and aggravatingly disappointing to one who searches them for educational data. They are strewn with reflections, with notes on sermons, with good resolutions, but almost not a word about life or work in the school. It is with a joyous burst of expectancy that one picks up the "Journal of Dr. Sewall during the last months of his senior year at Cambridge" but it is with bitterness that he goes through those cramped pages without finding an item on his college life. There is plenty about "sins," "horrid remiss in duty," "jealousy," "God's mercies," etc. We might excuse those looking forward to divinity as their calling such as Wigglesworth who recounts in 1654 the agonizings that he endured over the question whether it was right for him to go out on Sunday and shut a flapping barn door but we are hardly called on to forgive Baldwin over one hundred years later at Yale for pouring out these moralizings when he was not definitely decided for the ministry but was still looking longingly towards the law. Still more, down to the era of the Revolution, we find a little girl, Anna Green Winslow, leaving be-

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<sup>5</sup> Bouton relates such an incident in Vol. 4, *N. H. Historical Society*.

<sup>6</sup> B. Alcott's *New Connecticut*, page 24. Also quoted by Sanborn in Vol. 1, page 16, of his *Memoir of Alcott*.

hind her a manuscript book fairly choked up with the texts, summaries, and other pious sentiments—and she only ten years old. After that upheaval in our existence, and with the volcano of the French revolution smoldering across the waters, the famous physician, Benjamin Rush, could deliberately draw up a scheme of education for young ladies covering sewing, cooking, music, dancing, history, poetry, ethics, singing, astronomy, natural philosophy, chemistry,—but all to be transfused into one purpose by—“regular instruction in Christian religion.”

#### THE EDUCATION OF THE INDIAN.

This same benevolent care was extended to the soul of the red man, both up among the snows of New England and the forests of Virginia. The archbishop of Canterbury in his little geography in 1634 had naively remarked that the Indians were “utterly ignorant of Scripture, or Christ, or Moses, or any God.” The pious emigrants sought to convert these simple children by making bachelors of art of them. In some instances there seems to have been a response from these savages. One of them near the middle of the eighteenth century in Connecticut had asked that his children be fed and educated as he was not able to make these provisions for them himself. A few years later some members of the proud Six Nations had applied for instruction. It is soothing to say even at this distance that orders were given in both instances for these requests to be granted. Harvard College freely admitted applicants from this race, provided Indian textbooks, erected Indian colleges, and also sought to train young white ministers specially to go among them for their elevation. It was required of these candidates that they should be specially skillful in the Indian language.<sup>7</sup> Down on the James River was formulated

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<sup>7</sup>Harvard Archives, manuscript, College Books No. 4 and 5, April 28, 1712.

a very high standard at the end of the first third of the eighteenth century when a curriculum for these untutored natives comprised Latin, Greek, Hebrew, philosophy, mathematics, and divinity.<sup>8</sup> We can easily believe that the warmest advocates for educating the Indian honestly attempted to do so but the opposition among their own color and the age long conservatism among their pupils forbade all success. The racial prejudice was too strong and a few outcroppings of it at the beginning destroyed all hope. The rash soldier who shortly after landing at Plymouth Rock shot a fleeing Indian in the woods that refused to halt at his command must have left an indelible impression hostile to the newcomers and to everything they represented. Be the cause what it may the results were very meagre and as the red tide rolled backward toward the West the chances for schooling the Indian became less and less and the desire weaker and weaker after every conflict between the two groups. The whole notion was fanciful and the plans impractical. The pace was too swift and the red students died of the white plague, consumption. Only the official evidence remains of Harvard's success in her efforts to help these forest youth—this entry in a long list of graduates, "Caleb Cheeshahteamuck, Indus."

There was difference of climate and of environment between Massachusetts and Virginia but there was no difference of heart between the first settlers. The contrast of Puritan and Cavalier has made pretty little pieces of antithetical writing about as substantial as the Washington-hatchet-cherry-tree-figment. Proselytism of the darker skins burnt in the breasts of both, only the dweller along the James had two of these races to pray over. The planter there, William Hunter, who paid "Ann wages for teaching at Negro Schools" years before the break with

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<sup>8</sup> *William and Mary Catalogue*, 1859, page 11.

England, was in the same road with his brethren, except we can infer, he was a little way ahead of the others.

#### EDUCATION OF GIRLS.

Though not considered on the same plane with the savages, women had not reached equality with men in all relations outside of the home. It was generally understood that the boys were to come first even though they may not be so favored in the wording of the contracts. Naturally conduct was the chief factor in the girl's curriculum and special emphasis was laid upon her moral training. Before 1600 an English author had fixed the bounds for female education. Thomas Becon had declared that young women should be taught "to be sober-minded, to love their husbands, to love their children, to be discreet, chaste, housewifely, good, obedient to their husbands."

That medieval star, Vives, in the 16th century, restricted woman's reading to gospels, acts, epistles, Old Testament, Hieronymus, Cyprian, Augustine, Ambrose, Hilary, Gregory, Plato, Cicero, Seneca—all highly moral, well calculated to bolster up frail femininity which was "more inclined by nature to sin than men."

The same view was held generally through Europe, through the world. Even one hundred years later Fenelon thought that closest attention in the training of girls should be paid to modesty, gentleness, piety, household economy, and the special duties of their station in life. The colonists seemed to think that a little "reading and spelling, sewing, and embroidering," with sampler making, could not do much harm but not too much mental food was to be laid before them. Arithmetic, grammar, and geography, were generally thought superfluous except mere spoonfuls of dilution.<sup>9</sup> What need of figuring as all "expected to obtain hus-

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<sup>9</sup> W. D. Orcutt, *Good Old Dorchester*, page 308.

bands to perform whatever arithmetical operations they might need beyond the counting of fingers?" Gradually a little ciphering was added in the general scheme though there must have been individual instances of the study of arithmetic throughout the colonies from the beginning on down. Some would also learn the four basic rules as a matter of long-sighted precaution for, while they had no "idea of becoming old maids," they "might be left widows."<sup>10</sup> If they could sew, that was "the height of their ambition," for the bulk.<sup>11</sup> They were not fit to go to the same school with their brothers nor were they worthy of masculine example in the teacher. They got their smattering either at home or in "Marm schools," or "Dame schools," under the fostering hand of "Vestal maidens". The women who taught them not being educated it was only natural that their pupils got but little. Some New England antiquary has surmised that "probably not one woman in a dozen could write."<sup>12</sup> A schoolmaster who also wrote a textbook placidly drops a word or two relating to the fair sex—"it is generally remarked that they are so unhappy as seldom to be found either to write or cipher well"—and this just before 1800.<sup>13</sup> In many cases neither men nor women signed wills except by a cross but the proportion is very much larger in the case of women than men.<sup>14</sup>

Of course among fathers so devoted to learning, there were individual instances of highly cultivated daughters. One of the best known is Cotton Mather's daughter Katherine. After allowing for the natural pride of a parent, we can still see a solid foundation for the fond utterances of his funeral sermon at her death in the prime of young wo-

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<sup>10</sup> Warren Burton, page 152 of his *District School*.

<sup>11</sup> Felt's *Ipswich*, page 90.

<sup>12</sup> Eggleston's *Transit*, page 244.

<sup>13</sup> Dilworth, *Bookkeeper's Assistant*, XIII.

<sup>14</sup> Felt's *Ipswich*, page 90.

manhood, that she was "mistress of the Hebrew tongue" and a "good Latin scholar".

Another instance is the classical training of Jonathan Edward's ten sisters by their stern father, Timothy Edwards, who, so far as can be learned now, made them all go through the same course that the young men in his school took for entrance to Harvard and Yale. Nay, more, so well grounded were his girls in Latin and Greek that he would leave them to hear recitations in these ancient tongues during his absence on ministerial duties. Neither does this culture seem to have undermined their health, nor to have marred their feminine graces as they still loved needle work, and only one became an old maid.<sup>15</sup>

#### GENERAL ELEMENTARY COURSE.

The oldest existing English town in the United States is Hampton, Va., which also has the oldest free school.<sup>16</sup> Some twenty-five years after, near the middle of the 17th century, far away to the northward, the same zeal for education expressed itself, one of the earliest instances being found in the little place of Roxbury, Mass., when the inhabitants declared for a school "for the instruction of youth in literature."<sup>17</sup> Two years later came the famous statute of that colony requiring all towns to establish schools to teach reading and writing. But there was a general blanket of religion that the youth should be trained "in all scholasticall, morall, and theological discipline."<sup>18</sup> Later, near the end of the century, in some places ciphering was added to the meagre diet.<sup>19</sup> Again, five years beyond the birth of the

<sup>15</sup> Mrs. H. M. Plunkett, *Scribner's Magazine*, January, 1903.

<sup>16</sup> L. G. Tyler, page 77 of his *William and Mary Quarterly*, Oct., 1897.

<sup>17</sup> Dillaway's *Roxbury*, page 20.

<sup>18</sup> Dillaway's *Roxbury*, page 30.

<sup>19</sup> Chase's *Haverhill*, page 142.

new century, we find Latin added in the town of Plymouth.<sup>20</sup> It was a hard and practical time with these early settlers and very often only the most necessary rudiments could be imparted. Instead of arithmetic they often had "casting accounts". As the years counted up more branches were appended. Only seven or eight years before the outbreak with England, Providence, in Rhode Island, listed "reading, accounting, pronouncing, and properly understanding the English tongue, writing, arithmetic, the various branches of arithmetic and the learned languages."<sup>21</sup> This menu was perhaps too rich for the stage of development then as the report was not adopted but it is of value as showing the aim of the period.

Sweden was said to have very general education. Her emigrants were ambitious even though among the wilds of America, and it was one of their chief concerns to obtain books and appliances from the motherland.<sup>22</sup> A metropolitan center like New York was still more diversified in its hunger and it has been unearthed from the accumulations of the past that about 1730 a teacher offered "reading, writing, ciphering, merchants' accounts, Latin, Greek; also dancing, plain work, flourishing, embroidering and various sorts of work."<sup>23</sup> That common sense genius, Franklin, about 1750, evolved a very comprehensive scheme for elementary education, to cover six classes and contain reading, writing, spelling, history, natural science, composition, letter-writing, ethics, chronology, geography, logic, literature, grammar, and public speaking,<sup>24</sup> The first head of Pennsylvania University three years after declared that the English language with some writing and figuring and "a short system of re-

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<sup>20</sup> *Collections Mass. Hist. Soc.*, 2nd series, volume 4, page 87.

<sup>21</sup> *Collections of the R. I. Hist. Soc.*, Vol. 5, page 499.

<sup>22</sup> J. P. Wickersham, first chapter of his *Hist. Ed. in Pa.*

<sup>23</sup> Dunshee, page 62 of *Hist. School Dutch Reformed Church in New York.*

<sup>24</sup> J. P. Wickersham, page 228 of his *Hist. Ed. in Pa.*



ligion and civil truths and duties as the Socratic or catechetic way" was all that was necessary for the ordinary run of his fellow mortals—an early instance of aristocratic feeling in education. On down in the South, in Virginia, the same general educational road was followed with some side excursions such as French and Italian and novels.<sup>25</sup>

Attention was paid to behavior or deportment especially among the girls. It is most likely that Coote's English School Master was pretty well known to some of the teachers, with its numerous stanzas forming practically a school code. Certainly the duty to God and to parents and to all that were considered superior was properly emphasized. Not only were the children told to be "mannerly" but the points of dress were mentioned such as to have their clothes buttoned, their hose gartered, their handkerchiefs in readiness, to wash their hands and faces, their shoes tied and their shirt bands pinned, because "slovenly in your array" "I must have a fray." It was in the same strain that a German, Dock, had "one hundred necessary rules of conduct"—perhaps the first American book of etiquette, as it came out in 1764.<sup>26</sup>

Human progress is painfully slow not so much because people do not know what they should do but because their will is too weak. In that primitive period a few keen sighted men urged manual training, the learning of a trade, so that pupils could be fitted to make their way in life, and yet over two hundred years slipped by before we see any general application of their views. John Locke had put this in his curriculum, it had also been called for by that earnest soul, George Fox, the Quaker, it had been indirectly advocated in Virginia in binding out an orphan to some manual trade, it had been linked with reading and writing in New York when a widow got married again and her new husband

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<sup>25</sup> Tyler's *Quarterly*, July, 1897.

<sup>26</sup> J. P. Wickersham, *History of Education in Pennsylvania*, page 225.

contracted to give a certain amount of education to her children. The road was pointed out by keen vision but our forefathers could not be induced to walk in it. That allied subject, physical culture, had substantially hardly a germ in those days, in fact there wasn't time for it nor was there much need. Demands of frontier existence gave as much muscular exercise as the most were capable of.

But these lists so readily penned by officials and authors carried an infinity of pain and toil for the childish brain, which at this interval must be largely imagined, assisted by the data which can be gathered.

#### A—B—C—DARIANS.

Stretching back through epochs the road was smoothed out by myriads of little feet beginning with the alphabet, which at the start consisted of a sheet of parchment nailed on a board. Afterwards followed the Hornbook, the Primer, then the Metric Psalter. Some tiny ABC books have been preserved, very interesting miniatures a couple of inches long, one inch wide, with some eight or ten pages showing the alphabet and little verses such as

"The owl's delight  
Is to hoot at night."<sup>27</sup>

Many can now remember what an awful effort it was after weary days and weeks to impress upon their memory the names and shapes of these twenty-four characters. Teachers and philosophers felt this burden and sought to devise ways to lighten it. That educational reformer, Basedow, made letters of gingerbread and offered them as a reward as soon as the alphabet was mastered. John Locke with his rare insight devised blocks of 24 and 25 sides with a letter pasted on each and used them as dice in a game so that the infant

<sup>27</sup> There are about a dozen in the Boston Public Library, with some of the librarian's correspondence showing his suspicion that they may have been reprints and not original copies. The paper seems very modern.

intellect would grasp the alphabet as a pleasant pastime. From this he would go on to the combinations into words and thus tempt the child as a recreation and not as a task.

#### THE HORNBOOK.

The Assyrian clay tile with letters scratched on it is perhaps the earliest germ of our school books today, later replaced by the wax tablets of the Greeks and Romans, finally the slip of paper on some solid surface. But from the middle ages far into the 18th century the equipment for the first year or so at school was the Hornbook, a sheet of paper pasted on a flat piece of wood and covered with transparent horn so as to save the printing underneath. With a handle at one end it resembled a paddle and from the accounts that have come down to us was often used for that purpose as a means of punishing refractory pupils, dividing that duty with a switch. Fancy and taste soon ran riot with forms and designs so that there were handsome carved ones, for the rich and very plain, even uncovered ones, for the poor. Towards the end of its career it blossomed into the battle-dore, stiff cardboard with a flap folded down at each side, making in fact three leaves, having lost all semblance of that instrument. ✕The hornbook at its birth was a battle-dore but philological perversity made the unseemly swap of cognomens, and gave us this monstrosity of a term not at all descriptive of the thing it is applied to. ✕But all of both types had substantially the same features, an alphabet, Lord's Prayer, with verses either moral or scriptural, and mostly some stanzas of poetry for the memory. At the top on the first side with some came the biblical emblem of the Cross which in common language was soon referred to as criss-cross—Christ's Cross. Others had little pictures around the four margins to impress the letters on the memory as: B—Bear: H—Horse: O—Owl: etc. A still further aid was a row of nonsense jingles thus:

"Art we add  
 Ben is bad  
 Cat she can  
 Dad or dan  
 Ear and eye  
 Fat may fly  
 Go to gad  
 Him he had  
 Inn for jay  
 Ken the key  
 Let him lop  
 My old mop  
 Now we nod  
 Oar so odd  
 Pen and pin  
 Quit or quin  
 Rue the rat  
 Sad she sat  
 Top we turn  
 Use the urn  
 Von no van  
 Who is wan  
 Xen did vex  
 Ye may yex  
 Zeal for zest  
 and may rest"

A monument of research has been given up to this simple pedagogical help and two portly volumes show the results.<sup>28</sup> The subject is worth all of this investigation too. That plain simple little slip of wood in its original state represented at that time the long list of books and supplies that are required in our primary schools at the present day. Here the contrast stands in parallel columns with the Hornbook pre-

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<sup>28</sup> A. W. Tuer's *History of the Horn-Book*, 1896.

empting all the left hand and a stout array of items of to-day filling the right hand one:

## PRIMARY SCHOOLS TODAY. (Boston)

FOR COL- ONIAL DAYS.	}	The Finch Primer	
		Stepping Stones to Literature	\$1
		" " " "	\$2
		" " " "	\$3
		Cyr's The Children's Primer	
		The Werner Primer	
		Progressive Course in Reading, First Book	
		" " " "	Second "
		" " " "	Third "
		Franklin Primer and First Reader	
" Second Reader.			
" Advanced Second Reader.			
" Third Reader			
" Primary Arithmetic			
HORNBOOK	}	American System of Music, Reader	\$1
		McLaughlin & Veazie's Introductory Music Reader	
		National Music Course, New First Reader	
		Normal " " First Reader	
		Natural " " Primer	
		McLaughlin & Veazie's Introductory Music Reader	
		Educational Music Reader, \$1	
		First Lessons in Natural History and Language	
		Two number work blocks	
		Drawing Pencils	
		Common lead pencils	
		Rubber	
Paper			
Clay			

This little exhibit is an epitome of civilization for these two or three centuries. But this flowering is all rooted back to the hornbook. That meagre help had figures, spelling, reading, and its little verses were likely intoned. In fact, reading in medieval days was only taught as an end to music in many cases at any rate,—“to teach a child to help a priest to sing.” Such schools had “chanting, reading and writing.”<sup>29</sup> They generally disappeared as their special aim was enveloped in the religious atmosphere of education.

#### THE NEW ENGLAND PRIMER.

Supplanting the Hornbook which tasted too strongly of a state church came the New England primer, “the school book of the dissenters of America,” reprinted time after time for nearly two centuries, reaching an average annual sale of 20,000 copies, and a total one of over 3,000,000, even coming down so near to us as an edition in 1886, but one of the rarest books in existence in spite of this numerous circulation.<sup>30</sup> It is really an enlargement of the Hornbook, being constructed along these same religious lines. It reaches back to the very beginning of time as people considered the matter then. Of course theology had to lay the foundation, starting with the couplet,

“In Adam’s fall  
We sinned all”

and bringing in such history touches

Zaccheus he  
Did climb a tree  
Our Lord to see”

but morality followed hard in such solemn warnings as

“A dog will bite  
A thief at night”

<sup>29</sup> A. F. Leach, pages 70, 105, of his *English Schools at Reformation*.

<sup>30</sup> P. L. Ford’s edition is a most learned account of this most remarkable textbook in American history.

The bulk of it was composed of extracts from the Bible of hymns and of moral teachings. Even the largest of them contained only a few pages but it is a strain on the imagination to realize that this thin little volume did the service of half a dozen readers at the present day .

## READING.

For many years it is safe to say that the Hornbook and primer were about as far as the bulk of the children especially girls, ever went on the road towards easy reading. But for those who wished to climb higher there was the infallible refuge of the Bible, and advanced classes used this as a regular reading book.<sup>31</sup> As time passed on there were other aids such as Benezet's primer, constructed of the same ecclesiastical material and patterned closely after those great prototypes, followed with pious reflections and endless moralizings about goodness and piety and virtue and kindred ideas. Some of these also mixed in a little grammar and arithmetic. But none got very far from the religious atmosphere. About the middle of the 18th century Franklin recommended Croxall's Fables, a tedious book, and Fox's Primer was used by the Quakers having been published in Philadelphia fifty years earlier.<sup>32</sup> There is a very interesting delightful one in the American Antiquarian Society intended to cover the whole scheme of knowledge from the alphabet on through the elementary grades, ranging from words of one syllable on up to those of five and six, with a mixture of grammar, arithmetic, spelling and reading. The youthful mind was to be impressed early in life with the awfulness of existence. One extract from the earlier portions will show the heavy solemnity of the entire product: "Lord what is man: Originally dust, engendered in sin,

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<sup>31</sup> Bouton, in *New Ham. Hist. Soc. Pub.*, Vol. 4.

<sup>32</sup> Wickersham, page 27, *Hist. Ed. in Pa.*

brought forth with sorrow, helpless in his infancy, extravagantly wild in his youth, mad in his manhood, decrepid in his age: his first voice moves pity, his last commands grief."<sup>33</sup>

#### SPELLING.

There is evidence that up to perhaps 1700 or even later there was no regular spelling book, all the training in that exercise being taken from the reading lessons. ~~X~~ Later came regular books for that purpose, one of the most widely used being Dilworth's, about the middle of the 18th century. They all were a jumble of the Bible, morality, and religion luxuriously interlarded with the alphabet and with words of 1, 2, 3, 4, 5, 6, and more syllables. When it came to longer ones, the pedant and the preacher vied with one another in such words as "cocolico," "euroclydon," and "antitrinitarian." It was such hopelessly unfit specimens that youthful tongues had to stumble over until Noah Webster earned the gratitude of all ~~X~~ with his blue black spelling book, which is an opulent enlargement of the New England Primer, but did not come into use until after the close of the period this study aims to cover.

#### WRITING.

The passion for beautiful handwriting was inherited from the painful copyists of the middle ages. It was besides a necessity to make plain letters because many of the pupils had only their dictation exercises in some studies as text-books. An English authority declared "to write is in common life necessary and to write well commendable."<sup>35</sup> He took a very serious view of the matter and thought that a legible hand seems to carry with it some respect to the

<sup>33</sup> *Youth's Instructor*, Boston, 1757, p. 47.

<sup>34</sup> Bouton, *New Hampshire Historical Society*, Vol. 4.

<sup>35</sup> Christopher Wase, page 107 of his *Considerations Concerning Free Schools*, Oxford, England, 1678.



reader and easy flourishes in their places add grace, distinction, sometimes dignity. Aside from this hard common sense he expanded liberally on different styles of hands such as the "Italian Cursive" and "Court hand" and "abridgments." This last was an important concern owing to the universal methods of note taking in the higher institutions. The American teachers followed this general road and rather early in the 18th century began to pay attention to this branch of study, Thomas Hill getting out "the young secretary's guide" in Boston in 1730. Later on came the useless refinements which have filtered down to the present day. A certain fellow, John Jenkins, writing master, issued a most intricate analysis of the lines, hooks, and curves of letters, following this with laborious rules for combining these elements into symmetrical characters. Perhaps he was in earnest, perhaps he was shrewdly trying to disguise the pill when he stated on his title page that it was "a plain easy and familiar introduction to the art." Paper was dear and birch bark was perhaps as handy as birch switches. In some of the country schools at least this skin stripped from the tree took the place of our copy books now.<sup>36</sup> But in spite of these directions and these make-shifts only a small portion learned to sign their names. The larger number had to fall back upon the vulgar practice of making a cross.<sup>37</sup> In other cases the stern insistence of economy in time and material worked its way in giving us some of the most vexatious specimens of cramped writing to be found. Some of the diaries and some of the lectures on the shelves of libraries in New England would harass the soul and try the temper of the most benign among us. When this same carelessness is embalmed in Latin words many of which are contracted the student almost wishes that none of them had ever learned to sign their names.

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<sup>36</sup> Bouton, *N. H. Hist. Soc. Pubs.*, 1833.

<sup>37</sup> Felt, *Ipswich*, page 90.

## CIPHERING.

It is very likely that the forests near by throughout the most of the colonies furnished the surface for the small hands "to do sums" upon when they could not get the backs of old letters and the margins of printed pages. It is safe to say that there was not much figuring done because it was the custom then not to tackle the science of numbers until the child could read. Whatever of arithmetic was attempted in these lower grades was purely mechanical and utilitarian. People then had very little time for anything except the hard problem of making a living. "Casting accounts" was an aid to that and hence all of the arithmetic was done along that road largely. No great stress was laid upon it before entering college. Even there it was largely a matter of manuscript labor, transcribing from the teacher's directions. Several of these helps are preserved and the writing is large, round and clear, unfaded after these centuries.

## "FREE SCHOOLS."

There were almost as many names for the school as there were subjects taught. They were referred to as "Latin grammar schools," "grammar schools," "Latin schools," "free schools," and "public schools," all meaning practically the same thing. A vast amount of toilsome learning has been expended over the term "free school." In one sense of the word they were emphatically not "free" in some instances because they charged a fee.<sup>88</sup> It might also mean "free tuition." Again, an investigator holds that it indicated "free from the jurisdiction of a superior corporation." The corresponding Latin phrase used in the titles of English schools, "libera schola," has been tested with the very acid of scholarship but no satisfactory result has been reached. Again it has been thought that the phrase threw wide open the doors to

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<sup>88</sup> Barnard, Vol. 27 of *American Journal of Education*, page 97.

the accessibility of all pupils. Poor old Berkeley of Virginia has done more to perpetuate this collocation of words than all other agencies combined. He has also projected his reputation far into the centuries ahead of him and has innocently been the pivot of bitter sectional discussion. He it was who thanked God that Virginia had no free schools. What he really had in mind nobody knows at the present day. Certainly he was not a barbarian opposing all knowledge because he gave his own means to encourage education. Professor H. B. Adams seems to soften the case for this crusty aristocrat by suggesting that he might have been denouncing too much attention to the classics but this seems rather faint. At any rate no knight of the pen has effectually cleared up Berkeley's memory. Perhaps it is even well not to do so as Berkeley's reward will be continued life in history.

#### TEACHERS AND BOOKS.

The Roman poets spoke disdainfully of teaching as a very low calling. Christianity has not dissolved this pagan contempt, and traces still survive in rather strong colors to the present. Loafers, derelicts in life, floating hulks, the flotsam and jetsam of society were good enough to pound learning into unwilling heads. Indentured servants, even convicts, were seated at the desk with book in one hand and rod in the other. But conditions were no better in the motherland. Peacham had complained of the "general plague and complaint of the whole land that for one discreet and able teacher you shall find twenty ignorant and careless."<sup>39</sup> The whole world knows how the Father of his Country learned the rudiments from a pedagogue of very inferior rank. He was not the only Virginian of lordly station in that colony that was thus treated. McCabe tells of a convict purchased in Baltimore and carried southward to the sister locality for

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<sup>39</sup> Eggleston's *Transit*, page 243, so quotes.

conducting a school.<sup>40</sup> But what awful difficulties confronted even the ablest and most earnest! A group of children, no two in the same class, ranging in curriculum from the alphabet to the Latin grammar with only unsuitable textbooks shipped across the Atlantic and above all wild, rude and unruly in manner, ready to try their strength at any time with the master. . . . these were the frightful obstacles that the average teacher had to face and overcome if possible.

#### WHAT WAS ACCOMPLISHED?

With such drawbacks critics could easily say that "the course of instruction was narrow and partial. Each hungry child got a crust, but no one had a full meal." The whole outline was "meagre and impoverishing," only the "driest husks of grammar," no geography, no history, no reading book, no slates, in fact Noah Webster says almost no books except those made by the pupils themselves.<sup>41</sup>

There were the greatest inequalities of facilities and consequently the greatest difference of opinion. Gov. Dudley, in 1701, thought there was no child ten years old that could not read well and no man of twenty that could not write well.<sup>42</sup> But the microscopic antiquarians tell a different tale. Upham, the historian of Salem, who had crawled through the wilderness of town records, found enough to convince him that many in that ancient city could not read. It was perhaps to stay the rising tide of ignorance that Massachusetts had passed the law of 1647 calling for the establishment of schools in every town. This benevolent intention was not carried out, the ideal was too high to be reached then, but the spirit of equality for all then first took legislative form and has furnished the example for all her sister

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<sup>40</sup> *His Virginia Schools*, page 26.

<sup>41</sup> Brooks's *Medford*, page 280. Also Barnard's *Amer. Journal of Educ.*, Vol. 26, page 195, and Vol. 16.

<sup>42</sup> Eggleston's *Transit*, page 267.

commonwealths. This simple enactment paved the way for the toleration for all creeds and fixed the principle of a central authority for general education, but a pioneer light had already flickered along this path. John Knox, years before, had a scheme for the establishing of schools in every locality. True, he had thought of it only in connection with his own church.<sup>43</sup>

We are accustomed to think of the Latin races at the present day as being decadent. It may temper our pride a little to know what one of those nations, Italy, had been doing two centuries before this in the same grade of schools. The children in that peninsula then had "reading, taught by movable letters; arithmetic, taught by games; writing and drawing; the psalms, creed, Lord's Prayer, and Hymn to the Virgin, learned by heart; Latin" in conversation and history from tales, but just as with us the native tongue was practically ignored as unworthy of school training.

#### THE VESTIBULE TO COLLEGE.

All the classes, all the studies, the whole elementary machinery were in bondage to the college, swaddling clothes that the public schools have not yet entirely cast off. The A B C books, the Hornbook, the Primer, and all were traversed with the eye fixed upon the college doors. Latin was the "be-all and end-all" of the teachers' efforts.<sup>44</sup> So soon as the pupils could read they were rushed into Cheever's *Accidence*, then Lilly's *Grammar*, with its twenty-five classes of nouns, its seven genders, and its thicket of rules, all to be memorized by the liberal use of the ferule if necessary. The Government deliberately gave its sanction to this educational serfdom and imposed upon the localities the task of training youth "so as to fit them for the

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<sup>43</sup> Eggleston's *Transit*, page 232.

<sup>44</sup> G. H. Martin's *Massachusetts Schools*, page 58.

college.”<sup>46</sup> The municipalities followed suit and enjoined the erection of schools to prepare the youth for college in Latin and Greek. “The parsons’ schools” in Virginia had the same solicitude for these ancient languages.

But no matter what the purpose, no matter what the result, there was the same atmosphere over it all. The aroma of ecclesiasticism was pungent and penetrating, the catechism had to be graven on the memory, the preacher had to be heard and repeated, “because all man’s endeavors without the blessing of God must needs be fruitless and unsuccessful,” and hence the instructor’s chief duty was to “commend his scholars and his labors among them unto God.”

It is with the doxology and an amen we close the elementary school and open the scriptures for a text on the all-absorbing object of the whole system, the college.

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<sup>46</sup> *Mass. Records*, May 31, 1671.

## CHAPTER II.

### THE GENERAL COLLEGE COURSE.

#### SAVING OF SOULS.

“To further the college in piety, morality and learning” was the spirit of the act of the general court of Massachusetts in 1642, with regard to the newly established Harvard college. This was not a piece of formality either, because the institution was designed to train men for service in church and state, but it was the former that gave the tone to the entire place. The authorities impressed it upon the students that they were to be the religious guides in this wilderness. “When you are yourselves interested in the Lord Jesus Christ and his righteousness, you will be fit to be teachers of others,” were the solemn words of one of the early heads of Harvard.<sup>46</sup> The teaching staff for these pious students had to be sound in the doctrine, none to be tolerated who were “unsound in the faith or scandalous in their lives, and not giving due satisfaction according to the rules of Christ.”<sup>47</sup> It lay heavy on the minds of these saintly souls that a weighty matter they had not only for themselves, but for posterity, in order that there might be “a prolonging of God’s special favor.” It was to be a school of the prophets, no one was to be president except one fitted to serve his classes with divinity expositions, who could be “a faithful instrument to promote the holy religion here practiced and established, by instructing and fitting for our pulpits and churches and public and useful services such as shall be” brought there for study.<sup>48</sup> Of the total graduates for nearly

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<sup>46</sup> Peirce, *History of Harvard*, page 24, referring to President Chauncey.

<sup>47</sup> *Mass Records*, May 3, 1654.

<sup>48</sup> *Mass. Hist. Soc. Colls.*, second series, Vol. 4, page 64.

two centuries after the foundation nearly one-half were clergymen. Boys were publicly whipt to the accompaniment of two prayers for using "blasphemous words," and the privilege of "boxing" them was not formally repealed till 1755.

A few miles away at Yale was another ecclesiastical center. That sylvan sister, far southward on the banks of the James, also suffered the same quickening pains and darts of conscience for the spiritual welfare of the youth. Amid the trees of the sandy flats, William and Mary College yearned and tossed over the mighty question of pointing the little colony the road to Heaven. Their zeal burned within them to send forth a corps of ministers so that the Christian faith might be propagated even amongst "the western Indians to the glory of God." They established a college of divinity along with the other branches of knowledge.

In both quarters these harassed souls could congratulate themselves on having accomplished their purpose, so beatific and pure was the atmosphere of Cambridge that young men came from England to enjoy this flavor of "morals and religion."<sup>49</sup> Both Mather and Meade, the one in Boston and the other in Williamsburg, could record with a glow of fervor that persons had been properly trained for the pulpit. But what was still more important for the general interests then, though these two enthusiastic annalists did not at all realize it, these institutions also molded men capable of leading in affairs of state and politics. In both places graduates went forth to mount the platform, to argue in mass meetings and to debate in the legislature.

But for laying the foundations, these planters in the new world had to bring their notions across the Atlantic, to import their principles from the old home. Numbers who first came over that watery path had received their diplomas

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<sup>49</sup> Peirce, *Hist. of Harvard*, pages 8 and 21.



before starting. It is to Oxford, to Cambridge, to Dublin, to Edinburgh, to the European centers that we must go if we pierce to the very bottom of these virgin universities.

“AN ASININE FEAST OF SOW THISTLES.”

This is the Homeric splash given to the university training of his day by the ponderous Milton, who perhaps above all other English authors had absorbed the spirit of classical culture. He knew what he was talking about as he had been honored by his alma mater and also beaten by his instructors with rods.

The bill of fare had been evolved for 1400 years and was the result of finally blending two conceptions. Greece stood for the human side of education, Christianity devoted its strength to the salvation of the soul, to be obtained by abnegation and asceticism. The happy process had not been completed in Milton's time. Through these long ages painfully had the road been gradually advanced from the rudest element through cloistral, cathedral, parish, and monastery, school eventually to the university, which was the apex of the whole. But this last did not push up into view until the millennial year had slipped back into the past by more than a century. For two or three more such limits of time they were scarcely more than respectable grammar schools. They had their divisions and their departments, but there is many a pedagogue at the present day scattered through this land in little country huts hearing classes from the highest to the lowest that is doing the same kind of work that his fore-runners did more than 500 years ago in high-sounding universities. Each professor was expected to take a batch of boys through the entire course from the bottom to the top and then go to the bottom again and start over.<sup>50</sup>

They differed in scope, they varied in their terms, they changed their curriculum, but after all they were torches

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<sup>50</sup> Grant, *Edinburgh University*, Vol. 1, page 148.

feebly illuminating the darkness around. They stood for at least two things, they glorified study and they taught with the living voice, face to face with the class. There was practically no science, no history, no literature, a meagre vestment for us in the light of to-day, but the rudiments were there and out of them have gradually sprung our luxuriance. To the most of them all knowledge sprouted from what they called philosophy in three branches, physics, ethics, and logic. Each one of these three had prongs. Physics divided into arithmetic, geometry, music, and astronomy. Ethics broke into prudence, justice, fortitude and temperance—all qualities of character rather than subjects of knowledge. Logic became dual under dialectics and rhetoric, which really were nearly the same thing. In time all these branches were melted down into the trivium and quadrivium, that sound very large and learned, but were really not equal to a high school in any of our cities. When a boy had gone through these three, grammar, rhetoric, and dialects; then these four, arithmetic, geometry, astronomy, and music, he could proudly go back to his home as having eaten of the fruit of the tree of knowledge, having swallowed the two halves which have been characterized by an American educational writer as "the foundation of intellectual education" and as "relating mostly to nature."<sup>51</sup>

At about 15 years of age he began his university career, it goes almost without saying, nibbling on the Latin roots and the bulk of his energy while there was devoted to the same tiresome thing. Of Greek he got a glimpse and that not until late in medieval days. Of the natural sciences he attempted little and it would have been far better for him if he had not done that much, as he got only a mixture of ignorance, prejudice, and superstition. His Latin enabled him to put on theological airs, and weary his brain and other people's ears with problems of logic and ethics. Thus ran

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<sup>51</sup> W. T. Harris, in introduction to *Laurie's Univs.*, page VII.

the general medieval stream, but more pertinent to us are the rivulets in the little islands to the west of Europe.

#### THE COURSE AT DUBLIN.

In this Irish institution in the seventeenth century there were four classes, or one for each year, studying Latin, Greek, and the sciences. The first year had logic and the Isagoge of Porphyry; the second had Aristotle's Organon; the third browsed in Aristotle's physics, and the fourth in the same writer's metaphysics and ethics. They thus spent their strength on the work of this great Grecian. In addition to the central core they had lectures in science, but of what nature can only be surmised here. Very likely it was only a rehash of some of the crumbs of Aristotle. There were also regular exercises in the translation of Latin into English and lectures on Greek three times weekly. But the cream of the whole curriculum was disputation first on logical themes and second on philosophical and metaphysical. It was expected that all should talk Latin and at intervals each student was required to give declamations in the two classical tongue.<sup>52</sup>

#### AT EDINBURGH.

We have available more definite information about this Scottish school than about Dublin at the same time, but there is an exact correspondence in the number of years and in the emphasis laid upon Aristotle and the attention paid to the ancient languages.

In the first year they read Isocrates, Homer, Hesiod, Cicero, and Phocyllides, besides there was Ramus in dialects.

In the second year came a review of the first with the addition of rhetoric from such authors as Talaeus, Cassander,

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<sup>52</sup> Stubbs's *Dublin University*, page 139.

and Aphthonius. The Organon of Aristotle appears as one of the formal branches. Arithmetic is also mentioned.

In the third year came the Hebrew grammar, with more advanced dialects and rhetoric, and some human anatomy.

In the fourth year a cursory view was taken of the three preceding ones, with astronomy, chiefly from Aristotle either directly or secondarily.

That quibbling machine, disputation, was of course in constant use all the time to sharpen the verbal wits of the students. Superiority was claimed in having Aristotle in the original and not in Latin translation and also in paying more attention to style in the use of these two mediums and in the use of a modernized logic. But the important examination tests were based almost entirely upon Aristotle, with Ramus's dialectics, and some astronomy. It will be readily noted that a thin gruel was provided as practically there was no mathematics except the most elementary sort, and no history, and no science properly called.<sup>52</sup>

#### AT OXFORD.

At Oxford the same threads run. There were Porphyry and Aristotle, rhetoric, dialectics, physics, morals, and the same endless disputations and formal declamations. As the main object of the college was to fit for the ministry—"ad finalem sacræ theologiæ professionem"—it goes almost without saying that there were courses in the Greek Testament, that there were daily prayers early and late, very numerous on Sundays and festivals, with catechisms on the creed, Lord's Prayer, Thirty-nine Articles, etc., and an injunction, which we may well believe was well carried out, to listen to all the university sermons.

To become a bachelor of arts required four years in dialects, rhetoric, Greek, Latin, one gospel, with summaries of Aristotle's Topics and Posterior Analytics or Elenchi. To

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<sup>52</sup> Grant's *Edinburgh University*, Vol. 1, page 153.

become a master of arts the student had to spend three years more floundering in natural and moral philosophy, rhetoric, in the meantime bandying speech with his fellows in disputations, winding up all with a Latin summary of some dull treatise with his preface in Greek. Throughout he was to talk Latin, Greek or Hebrew—the very thing we are pretty sure he did not do except on parade occasions.

AT CAMBRIDGE.

The statutes of Queen Elizabeth provided very broadly for a four years' course, covering rhetoric in the first year, dialectics in the second and third years, with philosophy in the fourth, and with public disputations twice in the last year. It may be safely assumed that private exercises in this last went on with unabated frequency and vigor during the other three years.<sup>54</sup>

A most indefatigable historian of Cambridge says that Latin was almost the only branch here, certainly in the grammar course, in the century preceding the decree of Elizabeth. The authors followed were mainly Terence, Boethius, Orosius, with the grammarians Priscian and Donatus.<sup>55</sup> But we can hardly trust that matters were any better even up to 1600. A little before that time, Caius college insisted that Latin be a test for admission to its walls, as there was a kind of nervous dread lest "the university should become a grammar school, a name by which it is already designated to the detriment of its fame."<sup>56</sup>

There were observers and there were critics trying to improve the educational environment. The great Lord Bacon turned his eye upon the training there and penned his strictures. He thought that the staff had too small compensa-

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<sup>54</sup> Documents of Cambridge, 3 volumes, 1852, Vol. 1, page 459, in Latin.

<sup>55</sup> J. B. Mullinger's *University of Cambridge*, page 341.

<sup>56</sup> J. B. Mullinger's *Cambridge*, Vol. 2, page 163.

tion; that the professions were unduly emphasized; that the standard was so low as to allow unripe students to enter; that the discipline was one-sided, building too much on the memory, and that above all the fault was the stimulus given to theological strife, encouraging "private emulations and discontentments."<sup>57</sup> More detailed was John Webster in 1654, when he delivered censures along the entire line, all thoughtful and most endorsed by posterity.

#### OTHER COURSES.

Although we have steam and the electric current to-day, it may be doubted whether the curriculum is near so uniform in the different countries now as it was in those days. The mighty university of Paris had dialectics, rhetoric, and substantially the same portions of Aristotle as we find in her sisters, with the same Latin grammarians.

It will help to throw light upon the university studies, to glance at courses of different grades and different purposes. The oldest, the most widely extended of these other educational influences were the Christian schools that kept the flame of literature feebly burning throughout the darkest of all the ages. Originally and largely throughout their career, their motive was to prepare for the ministry. Beginning with memorizing the Latin psalter they had writing, singing, arithmetic, Greek, canon law, and logic, astronomy, and music and other quadrivial subjects. The mathematics were chiefly for assistance in calculating the church festivals. Latin was the main dish though usually the Roman writers were not much used, strength being placed upon the early Christian authors. It was the vehicle for the ideas of all the other subjects and was required in daily conversation. A very curious development in some instances was letter writing based upon the epistles of Cicero. It is perhaps

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<sup>57</sup> J. B. Mullinger's *Cambridge*, page 437.

to that root may be traced the six formal heads of our letters to-day, as those early instructors had six divisions: saluatio, captatio, benevolentia, narratio, petitio and conclusio

But the heart to which all the blood streams flowed was religion—"all these studies had in view one object, the proper understanding of holy scripture in the study of the scriptures themselves and of such of the Fathers as could be got (or extracts from them), was the governing subject in the whole scholastic system. Every subject was estimated by its bearing on the Bible and limited by the needs of the theologian."<sup>58</sup>

Even such an avowedly theological course as that provided by the greatest of all religious organizers, Loyola, followed nearly in the same grooves. These earnest dogmatizers had grammar, some Greek, rhetoric, philosophy, with mathematics and the merest tags of science and history brought in incidentally. They played on two cords only, Latin and Jesuit theology, and were highly successful in both.

It mattered little which side educational reformers were on of that great upheaval injected into European life by Luther, the school subjects were cast almost in the same mold. Melanchthon devised a very full and successful one for his period and yet it was memorizing Latin, talking Latin, reading Latin, versifying Latin, reciting from the Bible, singing hymns, with rhetoric which was really Latin, without mathematics, without natural philosophy.

It is a tedious iteration but a very significant one to show what was the conception in a secondary school in England founded by the government. The Ipswich school, provided for by Wolsey's statutes, about 1550, had eight classes. After the two preliminary ones the others went as follows: The third studied Æsop, Terence, the fourth had Virgil, the

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<sup>58</sup> S. S. Laurie, page 63 of his *Rise of Universities*.

fifth had Cicero's letters, the sixth had Cæsar's Commentaries, the seventh had Horace's Epistles and Ovid's Metamorphoses with Latin versification, the eighth finished Lilly's grammar and began Donatus, reading Valla, Terence, and other ancient authors. As a very remarkable glance for centuries ahead, we find English composition in the shape of essays and precis writing.<sup>59</sup>

#### THE TEXT BOOKS.

Throughout the long stretch in which Christianity had been gradually developing its educational system, besides Latin and the Bible, "the great repertories of higher instruction in the middle ages" were Cassiodorus, Isidorus, Martianus Capella, Boethius, the Latin Categories, Porphyry, and Alcuin's compendium of logic.<sup>60</sup> Under the rise of humanism Aristotle became the center of the intellectual sphere and upon him were based a number of secondary authorities. Very slowly were the investigations and conclusions of such men of science as Copernicus and Galileo made available for pedagogical use. In theology a tower of strength was Peter Lombard with his "sentences." To Isidorus perhaps belongs the credit of originating encyclopedias, as he really summed up virtually all knowledge in his day.<sup>61</sup>

It is a weary survey for centuries as there was no progress, only a distressing tread-mill tramp. Decade after decade, century after century was practically the same repetition even to the extent of every phrase and word. An attempt was made to impart life to the stagnation by disputation, but as the contestants were rigidly held within premises of pure presumption that none dare question, but little life was afforded.

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<sup>59</sup> A. F. Leach, *English Schools at Reformation*, Part I, page 107.

<sup>60</sup> S. S. Laurie, *Rise of Universities*, page 61.

<sup>61</sup> Isidorus died 636.



PHYSICAL INCENTIVES.

The most enthusiastic instructor must have felt utter despondency of soul, and it may have been due as much to the deadening dullness as to the roughness of the pupils that even university students had to be whipped to their tasks. The colossal Milton was treated to this baculine stimulant. Even Fellows at Oxford were rapped on their fingers and it was not infrequent for the teachers to beat their pupils and even authors sometimes had fisticuffs with each other. A great head master was accustomed to bring out the great talents in sulky boys by profuse switching. It is only natural that such customs should produce a wild noisy crowd "Bubbeing" beer in "a dingy, horrid, scandalous ale house" and that there should arise discussions as to whether it was good style to indulge in such drinks, with a final decision by the head at an Oxford college that the boys may guzzle ale and "be sots by authority."<sup>62</sup>

THE COURSE AT HARVARD.

Out of this medieval soil, compounded of religion, classical fetichism and the scrapings of science, came the curriculum at Harvard University, the first in America, taking its start in 1638. It may help to give a rough schedule made up from the earliest regulations that can be found, indicating at a glance the different subjects and the order in which they came weekly and annually as follows:

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<sup>62</sup> Prideaux's Letters, Vol. 15, *Camden Society Publications*. "Swigging beer" still survives in these old English Universities if we may trust a letter on the Rhodes Scholarship in the *Independent* during April, 1906.

## EARLIEST HARVARD SCHEDULE.

Classes.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
1st Year.	Logic. Physics. Disputes.	Logic. Physics. Disputes.	Greek etymology, Hebrew grammar, "Precepts Bible practice," "East- of Grammar in such ern tongues," authors as have variety of words."	Rhetoric, declamations (once monthly), "vacat rhetoricis studiis." <sup>63</sup>	Rhetoric, declamations (once monthly), "vacat rhetoricis studiis." <sup>64</sup>	Divinity, catechetical, Commonplaces, History, Nature of plants.
1 Year.	Ethics. Politics. Disputes.	Ethics. Politics. Disputes.	Greek prosodia & dialects, Poesy; Non-Chaldee, Ezra & nus, Duport "or the Daniel. like."	Rhetoric, declamations (once monthly), "vacat rhetoricis studiis." <sup>65</sup>	Rhetoric, declamations (once monthly), "vacat rhetoricis studiis." <sup>66</sup>	Divinity, catechetical, Commonplaces, History, Nature of plants.
1 Year.	Arithmetic. Geometry. Astronomy. Disputes.	Arithmetic. Geometry. Astronomy. Disputes.	"perfect their theory and exercise style, Syraic, Trostius, New Composition, Imitation, Epitome, both in prose and verse."	Rhetoric, declamations (once monthly), "vacat rhetoricis studiis."	Rhetoric, declamations (once monthly), "vacat rhetoricis studiis."	Divinity, catechetical, Commonplaces, History, Nature of plants. <sup>66</sup>

<sup>63</sup> "Vacat is here used in the sense of *is reserved* for rhetorical studies." *The Study of History in American Colleges and Universities*, by H. B. Adams, Circular No. 2, U. S. Bureau of Education.

<sup>64</sup> *First Fruits*; 1643, pp. 244-245, Vol. I, Mass. H. S. Colls.

## THE "LAWS" FOR 1642.

It will help to an understanding of the above to take a short survey of the rules of 1642. There were nineteen of them, every one bearing upon religion and conduct except five, impressing it upon the young student that it is "the main end of his life and studies to know God and Jesus Christ," that he shall pray in secret for guidance and shall read the scriptures twice daily, keep away from men of "ungirt and dissolute life" and repeat sermons whenever called upon to do so in the Hall. As for the literary side of his career, he is to be admitted to college when "able to read Tully, or such like classical authors *extempore* and make and speak through Latin in verse and prose *suo* (ut aiunt) *mente* and decline perfectly the paradigms of nouns and verbs in the Greek tongue." During his subsequent stay at the university he and his fellows shall "never use their mother tongue" except when specially allowed on some public occasion. Finally, he shall receive his first degree when "able to read the original of the Old and New Testaments into the Latin tongue and to resolve them originally" if his conduct has been satisfactory. He will get his second degree, the master of arts, when he can make a "summary of logic, natural and moral philosophy, arithmetic, geometry and astronomy, and is ready to define his theses or positions withal skillful in the originals as aforesaid," if again he has behaved himself properly.<sup>65</sup>

Many of the early emigrants to New England had undoubtedly studied at some of the English universities and it was unavoidable that the new course should be largely a copy of the old ones, that they themselves had gone through. Of the first comers to Massachusetts one in thirty, it is said,

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<sup>65</sup> J. Quincy, *History of Harvard*, Vol. 1, page 515. Quincy has these rules also in Latin, pages 577-79, both the English and Latin being official he says on page 193. The same are contained in the *First Fruits of N. E.*, Vol. 1, *Colls. of the Mass. Hist. Soc.*

was a graduate of the English Cambridge.<sup>66</sup> As pioneers facing the severity and roughness of life in a new land, transferring civilization across the Atlantic to a home amid wild forests, harassed by barbarous natives, they of necessity would develop an independence of judgment and a readiness of adaptation that would show themselves in education and in all walks of life. But a comparison of the plan with what we can learn of the parent institutions in Europe will disclose a variation of appearances but very likely no substantial difference in principles. While at Dublin, at Edinburgh, at Oxford we come across the name Aristotle, this great Stagirite must unquestionably be retained either directly or indirectly through some of his commentaries in the terms logic, ethics, politics, and physics. Similarly Porphyry, a brother Grecian, was extracted under some of the general titles. Not as many Greek authors are named as at Dublin and Edinburgh, but it is possible the same were studied. As with them little is said about Latin as that tongue was to be as familiar as the vernacular in both cases. In all there were Hebrew and other Semitic languages, rhetoric, dialectics, and the perpetual disputations. In all there was little mathematics and still less of real science. In all, on both sides of the Atlantic, the star of purpose was religion.

#### THE COURSE IN 1655.

It was not at all likely that there could be much development in two decades in a subject that had shown almost no change for centuries, but it is of some significance to note that there were some modifications in the way of greater definiteness. For admission, we learn from the fuller body of laws in 1665, that Virgil or other "such ordinary classical authors" was added to the list in Latin, and the New Testament, Isocrates, and "the minor poets or such like" in Greek.

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<sup>66</sup>M. L. Lough, page 17, Vol. 1, *Transallegany Hist. Mag.*, Oct., 1901.

There were other similar points mentioned, but nothing of important modification from the earlier forms.<sup>87</sup> The Grecian Isocrates, here first met with, is another link in the Atlantic chain as he appears in the course at Westminster Academy, England, in 1625.<sup>88</sup>

#### THE COURSE IN 1690.

More than a half a century later we see the same original body, only its anatomy is a little more accurately described under the official title of

“A PARTICULAR ACCOUNT OF THE PRESENT STATED EXERCISES  
ENJOYNED THE STUDENTS.

“The first year the Freshmen recite the classick authors learn’t at school viz., Tully, Vergil, Isocrates, Homer, with the Greek testament and Greek catechism, Dugard’s or Farnaby’s rhetoric and the latter part of the year the Hebrew grammar and Psalter, Ramus’s and Burgersdicius’s Logick.

“The second year the sophomores recite Burgersdicius’s logick and a manuscript called the New Logick extracted from Legrand and Mr. (?) Copland (?). Wollebius on Saturday, and in the latter part of the year Herebord’s Meletemata continuing still most part of the year recitations in the forementioned Greek and Hebrew books and dispute on logical questions twice a week.

“The third year the Junior Sophisters recite Herebord’s Meletemata, Mr. Morton’s Physicks, Dr. More’s ethick, a sistem of geography, and a sistem of metaphysicks, Wollebius divinity on Saturday and dispute twice a week on physical and metaphysical and ethical questions.

“The fourth year the senior sophisters recite Alsted’s geometry, Gassendus’s astronomy, goe over the arts, viz.,

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<sup>87</sup> *Proceedings of Mass. Hist. Soc.*, Vol. 14, pages 207-215.

<sup>88</sup> *Public Schools*, page 92, published, Edinburgh and London, 1867 (pages VIII, 414), by the author of “Etoniana.”

grammar, logic and natural philosophy, Ames Medulla, and dispute once a week on philosophical and astronomical questions." <sup>89</sup>

But this is official and consequently dry. A gossipy, newspaper account of the present day, we can never have but we come the nearest towards it, so far as can be learned from the data now available, in the account of Cotton Mather, an ecclesiastical pedant and hence doubly tiresome, but it is the best we have of anything like a living picture of the school room in Harvard at the time, about 1700, in his *Magnalia*.

#### COTTON MATHER'S ACCOUNT.

When a pupil had learned at the grammar school so as to be able to "read any classical author into English, and readily make and speak true Latin, and write it in verse as well as prose; and perfectly decline the paradigms of nouns and verbs in the Greek tongue, they were judged capable of admission in Harvard Collidge; and upon the examination were accordingly admitted."

After admission they "read out of Hebrew into Greek from the Old Testament in the morning, and out of English into Greek from the New Testament in the evening," then they were instructed in the Hebrew language and tutors led them through all the liberal arts, e're their first four years expired;" "And in this time they had their weekly declamations on Fridays in the Collidge Hall, besides public disputations." Then in June for three weeks, as candidates for degrees, they stood on Mondays and Tuesdays in the Hall for anyone to examine their skill in the languages and sciences which they now pretended unto:" this was called "sitting of solstices."

But at commencement, "formerly the second Tuesday in

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<sup>89</sup> Page 31, "Harvard College Papers, Vol. 1, 1650-1763," Mss. in Harvard Archives.

August, but since, the first Wednesday in July," they "held their act publicly in Cambridge" for getting the degree of "bachelor." Their "orations" addressed to "all persons and orders of any fashion then present" "with proper compliments, and reflections were made on the most remarkable occurrences of the preceding year: and these orations were made not only in Latin but sometimes in Greek and in Hebrew also; and some of them were in verse, and even in Greek verse, as well as others in prose. But the main exercises were disputations upon questions wherein the respondents first made their theses."

Those who had studied three years after their first degree got the master's degree upon "exhibiting synopses of the liberal arts, by themselves composed, now again publicly disputed on some questions of perhaps a little higher elevation."<sup>70</sup>

#### THE COURSE IN 1726 AND LATER.

During this little more than a quarter of a century, making allowance for a difference of phraseology, it can be said there was absolutely no change in the course. Even the same text-book authors are mentioned and the same descriptive terms for the various subjects.<sup>71</sup>

But by 1740 either new authors had been chosen or the names of the regular ones were printed, as we find Ward's mathematics, Gordon's geographical grammar, Gravesande's philosophy, Euclid's geometry, Brattle's logic, Watt's logic, and Locke's human understanding.<sup>72</sup>

We also learn about this time something of the studies for entrance. Some candidate who afterwards developed into a preacher, Holyoke, has left the scope of what was required

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<sup>70</sup> Cotton Mather, *Magnalia Christi Americana*, 1702, Volume 2, page 10 of the 1820 reprint.

<sup>71</sup> J. Quincy, *History of Harvard*, Vol. 1, page 441.

<sup>72</sup> Peirce, *History of Harvard*, page 237.

of him as follows: Twenty-four lines of the second *Æneid* of Virgil, fifteen lines of the third, Cicero's second and third Catiline orations, twenty-fifth chapter of Matthew in the Greek testament and the twelfth chapter of Luke in the Greek testament. Besides a theme was given to each one to develop, perhaps outside, to be handed in after several days. He records three at this particular instance:

Labor improbus omnia vincit.  
Sapientia praestat viribus.  
Semper avarus eget.

#### THE METHOD.

Like her European prototype, Harvard had the tutorial system by which each instructor generally led his classes in all the subjects. It was only after very patient reasoning with the innate conservatism of the human nature in the governing body that in 1767 the teachers were assigned to subjects so that one had Latin, another Greek, another logic, metaphysics, and ethics, and another mathematics and the sciences. Perhaps the means did not allow of this division sooner, it is still more doubtful whether the students were ripe enough for this step in the earlier stages. Nearly one-half a century after the opening of her doors, the man with the best means of observing could say that the college was in "a low sinking state."<sup>73</sup> Something over two decades following he could refer to the pupils as "forty or fifty children," hardly mature enough to appreciate his learned expositions of the scriptures, or at least less worthy of his efforts than his church of some 1,500 attendants.<sup>74</sup> But the passion for progress, for learning, for culture, was unquenchable. No matter what the obstacle, no matter how meagre the appliances, the institution climbed upward and

<sup>73</sup> Increase Mather's Diary, page 317, Vol. 3, *Mass. Hist. Soc. Proceedings*.

<sup>74</sup> J. Quincy, *History of Harvard*, Vol. 1, page 96.



steadily carried onward the torch, flickering at times, that still lighted the path for her neighbors.

YALE A DUPLICATE OF HARVARD.

The founders of Yale had thus alongside of them a pattern, and when they opened their doors just at the beginning of the eighteenth century it was the most natural and the most sensible thing for them to model their course as nearly like that of Harvard as possible and to keep it so throughout the colonial times.<sup>75</sup> Even at the end of our struggle with England the youth at Yale were still having their formal disputations, their forensics, and the same subjects as their brethren in Cambridge and almost the same textbooks, going through the same mill for admission. To make the parallel still more striking there were the same kind of criticisms of the standard being low. There were also strictures on the curriculum showing a very keen insight into the future. Just before the outbreak of our hostilities with the motherland one of the tutors sarcastically referred to the whole scheme as the "progress of dullness," denounced the emphasis laid upon ancient languages and declared the metaphysical hair splitting of little advantage in any business or profession in life" and called for the teaching of English.<sup>76</sup> What an eye he had for piercing the veil ahead as it was at least one hundred years before his demands for practical discipline in English talking and writing were heard by the educational authorities.

WILLIAM AND MARY.

Although amid a slightly different geographical and social environment, William and Mary college is cast in the same educational mold as her sister in New England. Per-

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<sup>75</sup> W. L. Kingsley, *Hist. Yale*, Vol. 1, page 25, also Vol. 2, page 496.

<sup>76</sup> W. L. Kingsley, *Hist. Yale*, Vol. 1, page 98.

haps she represents a return to the original source for both more than the influence of Harvard. The ruling class here still looked across the Atlantic for its customs and for its models. England was still "home" to them just as it is to-day to the colonists in Australia though separated from their parent land by more than twice the distance the Virginian was. Those who could afford it sent their sons for schooling across the waves. School masters in England looked for patronage in the colonies and some kept their advertisements in the Virginia papers. In the grammar school for the institution it was the announced purpose that the boys should follow in the steps of their brother pupils in the corresponding training centers of England.

But coming from the same fountain head the stream was practically the same as that in New England. There was the same aim of breeding ministers, of inculcating religious truths, of studying philosophy, the ancient languages, and sciences, of disputations and declamations and, still more analogous, of christianizing the Indian.<sup>77</sup> As foreshadowing Virginian supremacy in the public affairs of the country, greater emphasis was laid upon law and politics at an earlier date than elsewhere in this country.

In some respects this southern effort approached its medieval model closer than any other in America. The management attempted to ingraft upon this material energetic democracy one of the most distinctive marks of an ecclesiastical hierarchy. Just seven years before the first shock of arms the board of visitors resolved that when one of the instructors got married his place should be considered vacant because "engaging in marriage and the concerns of a private family" was "contrary to the principles on which the college was founded and their duties as professors."<sup>78</sup>

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<sup>77</sup> Beverly, *History of Virginia*, page 88.

<sup>78</sup> *History of William and Mary*, page 45, Murphy edition, 1870.

But in spite of their adherence to the old world, in spite of their desire to tread the same paths, time and place were against them. One of the professors had to admit, in 1724, that "the nature of the country scarce yet admits of a possibility of reducing the collegians to the nice method of living and studying observed in Oxford and Cambridge."<sup>79</sup>

#### OTHER INSTITUTIONS.

Besides these three there were seven more born in our colonial period but as they were young and as their courses were as far as they could make them only modifications of those offered by the three elder sisters, it is unnecessary to go into the details of what they presented. Besides the data is not so full and not so minute. In those respects the pioneer of them all is at the front.

#### HARVARD THE GREATEST OF ALL.

Not only does Harvard furnish the fullest account of her life but she had the fullest life to describe. She started first and she long held undisputed primacy in achievements and influence. The most varied activity, the fullest intellectual feast, the most capable adaptation, the readiest receptiveness and at the same time the safest judgment are to be found here, at this, the oldest, the largest, and the greatest of all the institutions of learning in the new world and among the greatest in the whole world.

#### A MORE DETAILED STUDY.

But even with Harvard in colonial days, as compared with the present the course was not only meagre in range but also meagre in description, and it is necessary to go much wider and deeper than the formal terms to see what was really taught, to learn what interpretation was put upon

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<sup>79</sup> Hugh Jones, *State of Virginia*, page 27.

the different subjects offered. With us college catalogues and study schemes do not always accurately portray what is done in the class rooms. Difficult as it is now to acquire this knowledge except by actual experience, it can be easily imagined how enormously greater is the task for a period two hundred years ago in a new land with all of the human energies devoted to the question of reducing the obstacles of nature rather than of training the human mind.

### CHAPTER III.

#### ANCIENT LANGUAGES.

##### LATIN, GENERAL VIEW.

Through the centuries the mighty tread of the Roman legion has echoed in the sonorous phrases of the Latin tongue. Massive in its structure, merciless in its grammatical rigidity, it embodies the very spirit of Rome which first taught the world how to be ruled by formal law. Just as there had been a preliminary struggle of Greek and Roman for mastery, so there had been a conflict between the two languages as to which one should be the transmuted to the succeeding generations of the life and thought of the classic days. In both cases the city on the banks of the Tiber won. Other rivals had bowed at the touch of Latin imperiousness, just as other peoples had yielded to the Roman standard.<sup>80</sup>

Rome was the mistress of the material world, Latin became the mistress of the intellectual world. The very force of inheritance made her sway supreme. She had gathered up the entire knowledge of the preceding ages. Through traveller, through historian, through dramatist, Greece had garnered the best gems of the eastern nations, these in turn she had passed on to her neighbor beyond the Adriatic. The experience that Rome had added was already now locked up in her speech. The rise of the Christian church, the centralizing of all power in this seven hilled town placed in her hands what has been through all ages the most potent factor in marshalling the emotions and shaping the sentiments of humanity. Latin became the handmaid of religion. The church though not the exclusive agency in establishing schools was active in education, carrying down

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<sup>80</sup> *Gibbon*, Vol. I, page 44, Milman edition, 1858.

deep the foundations of her control.<sup>81</sup> The decrees were issued in Latin, the priest delivered his message through it, it was the voice of the soul in its yearnings for higher life. It breathed the grace and pity of the Redeemer and spoke the terrors of revelation. It was the key to the problem of existence. It explained the past, it soothed the present, it revealed the future. It pointed the way for the believer, it barred the road for the heretic. It was the princess of the trio of divine dialects.<sup>82</sup> Its noble duty was to prepare the sacred men of the church who were to look after the eternal welfare of mankind.<sup>83</sup>

It not only vanquished Greek but for a long period it stifled all the vernacular of Europe. Through all these centuries it was the only sphere for the mind, all European achievements and learning were in this dress. It was the medium for scholars, it was the instrument for officials. Whatever germs of international law and diplomacy can be discovered were budded upon this philological tree. The lawyer used it in his documents, it was indispensable to the physician. It was not only handy to the more elevated callings but the daily operations of life were carried on in this atmosphere. The messenger of the courts performed his tasks in it, it furnished the merchant with the names of his wares, the musician trusted it in his mastery of sound, it appeared on the ledger of the bookkeeper, the architect relied on it in his plans. It was the universal medium for letter writing, bearing the tender messages of the lover, the familiar items of relatives and friends, the weighty utterances of governments and the solemn deliverances of the clergyman. The querulous complaints and the insistent pleadings for more money of the son in a far off university

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<sup>81</sup> Laurie, *Rise of Universities*, page 108, claims that the church did not found universities any more than it founded chivalry.

<sup>82</sup> Eggleston, *Transit*, page 129, quotes Laing.

<sup>83</sup> C. Wase, page 45, *Consid. Free Schools*, calculates there were some 15,000 of these "ecclesiastics."

were also buried in the masses of Latin missives. In fact everyone who wanted to be in touch with his fellows through the aid of words, either written or spoken, had to have a certain facility and command of Latin.

The artist and the philosopher were impressed with its vastness and its mightiness. In the court of Charlemagne was a famous picture representing the seven liberal arts with grammar as queen, knife in right hand for erasing errors and thong in left to show supremacy. John Locke, seer as he was, fell under her spell. Profound in his grasp he could point out the weaknesses of education in his day but he seemed afraid to lay a profane hand upon Latin which he says "I look upon as absolutely necessary for a gentleman." Perhaps at heart he felt the hollowness of this view but even he did not feel strong enough to set himself up against the prevailing custom. He goes on to say "Latin and French, as the world now goes, are by everyone acknowledged to be necessary."<sup>84</sup> The good Moravian bishop Comenius had a noble conception of making Latin "the means of inter-communication for the instructed of every nationality," a dream of a world language that even to the present we see still unfructed. A touch of the humorous is added to this ponderous subject when a schoolmaster in Virginia chided his student to grapple with the intricacies of this discipline by telling him that "he will never be able to win a young lady of family and fashion for his wife" unless he can trip easily and skillfully through the moods and tenses of Latin.<sup>85</sup> Down to the immediate present we find the testimonials of profound thinkers to the value of this study. Latin and Greek are considered the embryology of our civilization, "the humanities," because they are the fountain head of all art, science, and jurisprudence.<sup>86</sup> To

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<sup>84</sup> R. H. Quick's *Locke*, pages 138, 171.

<sup>85</sup> Fithian, *Journal*, page 125.

<sup>86</sup> J. K. F. Rosenkranz, page 278 of his *Philosophy of Education*.

one of the most prolific American educational writers, Latin reproduces "the political atmosphere of Rome" with her conception of law, and social organizations, revealing "this Roman spirit in its intimate and characteristic form."<sup>87</sup> To the Italian humanist it was "the portal of all knowledge whatsoever," the guide for right living.<sup>88</sup> The whole case was condensed into a nugget by Quintilian hundreds of years before. To him grammar was literature.

#### LATIN CONVERSATION.

As the gateway of all knowledge men had to turn to Latin. Tradition suggested this step, practice needed it, culture called for it, authority ordered it. It was far easier to use this tool ready to hand than to fashion one from their own native speech, and even after the edge of the latter had been sharpened, from mere force of habit, they still clung to this classic language. It must be got in its three-fold entirety, reading, writing and talking. There was a passion for oral skill in it and before the eleventh century Latin conversation books for the ordinary events of the day had to be memorized by the pupils. All of education was directed to this end. In the sixteenth century the Strasburg gymnasium had ten classes, all in Latin.<sup>89</sup> The most famous schoolmaster of that time "wanted to restore the language of Cicero, and Ovid and to give his pupils great power of elegant expression in that language." He was downcast and wailed because a German of eighty couldn't talk Latin as well as Cicero did at twenty.<sup>90</sup>

In England the same ambition reigned in the academies. At Harrow, and at Westminster even to 1800, far more

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<sup>87</sup> *Universities and Their Sons*, page 17.

<sup>88</sup> *Vittorino*, page 144, by W. H. Woodward, Cambridge, Eng., 1897.

<sup>89</sup> F. V. N. Painter, *History of Education*, page 160.

<sup>90</sup> R. H. Quick, *Essays on Educational Reformers*, page 27. Sturm is meant.



stress was laid upon the colloquial command of Latin than upon rules of conduct. A false pronunciation brought down a lively flogging but a liar escaped.<sup>91</sup> At the universities on both sides of the ocean nothing was to be heard in the class room or out of it except these sounds generated on the Mediterranean. In Paris it was imperative that the applicants state their cause in Latin without a French word.<sup>92</sup> In Edinburgh the regulations sought to cover the entire existence of students as it was enjoined upon them to speak Latin both in the schools, in the close, in the fields, and in all other places where they were together and "none is to be found speaking Scotch."<sup>93</sup> Their formal exercises, even those for recreation, had to be performed in the same medium. In many institutions Latin plays were given, both the ancient ones and original ones composed at the time.

All this fiery zeal for grasping another tongue leaped to America. English was felt to be a kind of poor relation that no one wanted to associate with an intruder in high company. Children at one time in New Haven who bothered the master by spelling in English were sent home. It mattered not what the nationality was, there was the same fanaticism for Latin. A Dutch burgomaster in New York desired instruction for the youth in that most useful language, Latin.<sup>94</sup> The stinging epithet of "asinus" was applied to the dull boy who had to use English in order to be understood.<sup>95</sup>

#### THE GOAL FOR ALL.

The securing of this linguistic vehicle was the object of all, both in the college and in the lower schools. Following

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<sup>91</sup> *Public Schools*, page 319.

<sup>92</sup> H. Rashdall, *Univs. Mid. Ages*, Vol. 2, page 595.

<sup>93</sup> Grant, *Edinburgh*, page 140.

<sup>94</sup> C. L. Brodhead, *History of New York*, page 640.

<sup>95</sup> Eggleston, *Transit*, page 215.

Harvard, Yale even as late as 1720 required "scholars in their chambers and when they are together shall talk Latin," no English to be allowed except as a special privilege.<sup>96</sup> Half a century after this, at William and Mary, the faculty had voted that "the students in the philosophy schools shall speak Latin declamations of their compositions, and that by two of them in rotation this exercise shall be performed in the chapels immediately after evening service every second Thursday during term time."<sup>97</sup> This action was most likely very agreeable to many of the gentry there. A hundred years earlier one of them had provided by will that a person be "bought" to teach his son English or Latin but the parent expressed his preference for the latter.<sup>98</sup> About the time that this Virginia planter was so much concerned over Latin for his offspring, the salutatory at Harvard consisted of more than 2,000 Latin words.<sup>99</sup> Here within a decade of the sundering of our ties with England a fund had been subscribed to provide prizes for those who "excelled in the knowledge of Latin, Greek, and Hebrew languages, and in elocution or just pronunciation or action."<sup>100</sup>

It is well known that the elementary schools, provided for generally by law in New England were mainly to teach Latin. As far back as 1677 Connecticut decreed that every "county town" should keep such a school. Just seven years later the trustees of the New Haven grammar school reported on the facilities for instructing "hopeful youth in the Latin tongue and other learned languages so far as to prepare such youth for the college."<sup>101</sup> This fondness sur-

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<sup>96</sup> W. L. Kingsley, *History of Yale*, Vol. 2, page 496.

<sup>97</sup> *History of the College*, page 43.

<sup>98</sup> *Virginia Magazine of History*, Vol. 2, page 236.

<sup>99</sup> Harvard College Papers, Vol. 1, page 45, Mss. Of course all on religion and morality.

<sup>100</sup> Harvard College Papers, Vol. 2, page 7, Mss.

<sup>101</sup> Barnard's *American Journal of Education*, Vol. 4, page 710.

vived even the stress and agony of separation from the motherland. Just five years before the close of the century Leicester Institute wanted the exhibition to consist of Greek, Latin and English orations.<sup>102</sup> It was not until thirty years later that Massachusetts repealed that old statute enforcing the establishment of schools for teaching Latin, but even with the light of recent progress in their eyes the lawmakers still bound seven towns to these Roman bonds. It was not until this date that they began to use the term "high school" instead of Latin school.<sup>103</sup>

This fever has burnt in European veins 2,000 years and all the cooling effects of modern languages and modern sciences have not entirely reduced it. The Jesuits still talk it and the brethren of every nationality communicate with each other by means of it. To-day they have fat little conversation volumes up to date in Latin terms for all new ideas introduced into English by the enormous developments in science and numerous inventions. One of the later ones appears under the authorship of S. W. Wiley, though it is really a conversation book of the whole order.<sup>104</sup> So thoroughly are they drilled in Latin that it becomes a second speech for them, conversing in it with the greatest ease. But they give up eight entire years, with the exception of one hour daily, to this language, and then keep up their practice in it for the balance of their days. One of the latest and most interesting survivals of it is to be observed in one of the most remarkable American educational institutions, the Catholic University of America founded within the last quarter of a century at Washington, D. C. Here it is expected to be used in the Latin Seminar.<sup>105</sup>

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<sup>102</sup> Barnard's *American Journal of Education*, Vol. 28, page 799.

<sup>103</sup> T. Davidson's *History of Education*, page 245.

<sup>104</sup> S. W. Wiley, *Guide to Latin Conversation*, 1892, 18mo, over 500 pages. He got out another edition, smaller, "How to Speak Latin."

<sup>105</sup> Year Book, for 1903-1904, page 70.

## THE PATHS TO THE APEX.

“Grammar was studied for years in order to learn to speak and write Latin correctly; dialectic in order to use it logically; and rhetoric in order to handle it oratorically.”<sup>106</sup> As far back as we can trace the teacher started with lecture and dictation so as to give the pupil the morphology of Latin. The grammar proper was studied in the dialectical method, by a round of arguments pro and con on questions picked out for this trial of verbal strength. Under these four formal methods was the problem tackled; by dictation of words and inflections, by comment upon passages, by disputations upon extracts, and by exercises on accent and pronunciation. Then came the reading, along with both these went talking and writing. In the early centuries, simple narratives, such as Phaedrus or Valerius Maximus were chosen, mainly from post-classical writers rather than those of classic days but these, especially Cicero and Sallust, were eventually included. The process was almost microscopic. The particular passage was treated word by word as to meaning, connection, style, arrangement, allusions, and comparisons with other writers. The students took notes and gradually evolved a grammar and a vocabulary each for himself. The method goes back to the days of Plutarch who has samples of this same kind of work.<sup>107</sup>

## STURM'S COURSE BEFORE 1600.

This great architect of education had an elaborate scheme in his ten year gymnasium at Strasburg. Though prolix it is worth space as illustrating one of the best ideals in continental Europe about the beginning of the modern era.

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<sup>106</sup> F. V. N. Painter, *Hist. Educ.*, page 165, quoting from Raumer, a noted German investigator.

<sup>107</sup> W. H. Woodward's *Vittorino*, page 210. Also *Erasmus*, Vol. I of Works, page 527.

In his lowest class, that for beginners, he had the Latin declensions and conjugations with some reading and writing.

In the second year this routine was followed with the memorizing of Latin words and the irregular grammatical forms.

In the third the same core is found with composition, exercising on Latin verses, following Cicero's letters of style.

In the fourth came syntax and the application of the grammatical rules from Cicero's letters with writing and translations into German.

In the fifth Cicero was translated and a start was made in Latin poetry and in Jerome's letters.

In the sixth a number of new words were added, versification and mythology were taken up and Virgil was yoked with Cicero as material to be translated into German and to serve as the basis for composition and declamations.

In the seventh came Horace besides the other authors in the previous years, with numerous exercises in composition and a minute study of style.

In the eighth composition, translation and conversation were continued using such authors as Plautus and Terence.

In the ninth the same painful attention to composition, translation, conversation, and style, with much memorizing and reciting of these ancient authorities. Formal rhetoric and dialectics were included.

In the tenth the same general outline was followed with the addition of weekly dramatical entertainments in Latin.

The only language at all in the school besides Latin was Greek, with a mere modicum of German, but neither one of these received more than a fraction of the attention given to Latin. Of course voluminous notebooks were required to be made by the pupils.

## ROGER ASCHAM'S NOTIONS.

At about the corresponding period there was in England a very quaint and pregnant writer on education. It is well worth while to glance at his ideas which though not differing very materially from the practice on the mainland gives us another side to this question and enables us more safely to comprehend its limits. He directed that the teacher should explain very carefully the portion selected and parse it entirely. After an interval the pupil is to be examined upon this lesson, also making a translation of his own book into Latin. This the master is to go over with him, criticising, correcting, and pointing out in what respects it differs from the great model left by Cicero. He insists that notes shall be made under such formal heads as propriety in the choice of words, metaphors, synonyms, variations in meaning, antonyms and phrases. He epitomized the whole progress of learning a language under the six heads; *translatio*, *paraphrasis*, *metaphrasis*, *epitome*, *imitatio*, and *declamatio*.<sup>108</sup>

## WHAT WAS DONE AT WESTMINSTER.

It has not been possible to find for any American institution such a full account as we have of Westminster at about the time that the Mayflower cast anchor at Plymouth. It is very likely that some of the early settlers went through the routine at this institution. It is the safest kind of a deduction that what was done here was followed as closely in the new colonies as the difference of condition would permit. The following may be considered in fact a picture of the Latin course in the new world with some inevitable variations. Hence this deserves proper setting for our purpose. There are only two years covered but they are sufficiently typical.

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<sup>108</sup> Ascham, *The School Master*. *Metaphrasis*, changing verse to prose.

In grammar the boys regularly recited pages from Lilly, being called out from a circle of 14 or 15 standing in front of the teacher and one taking up where the other had left off. Again others would be called forth to make extempore verses or to expound some given passage, but all had to be ready to recite from memory. They were liable at any time for extempore translations into Latin to give an account in this tongue of any exercise previously studied. At some time in the morning session the teacher would faithfully expound some selections in the method indicated above and in the afternoon his work had to be returned to him by the students with the most exact construction and application of grammatical rules and full explanation of rhetorical figures. And later in the day they had to recite literally a section of definition or of proverbs and sentences specially arranged for this purpose by the teacher. Constantly they were to be prepared to transfer from any one of these three languages into any other; Latin, Greek or French, in prose or in poetry. And a still more difficult thing was to make prose or verse upon some theme given them the day before. All were under the eyes of monitors who kept them strictly to the speaking of Latin. A form of punishment that has come down to the present day was to repeat long portions from the classical authors. On Saturdays they wound up the week's toil with declamations in one of these ancient languages. The requirement of talking Latin in the class room was retained to 1800.<sup>109</sup>

#### THE TRANSIT TO AMERICA.

To these virgin shores, to these forest wilds, were imported the same riot of the intellect for Latin speech and the same monumental effort to acquire this medium and the same machinery for advancing towards this aim. All wanted to talk it and consequently all were to read it, to write it,

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<sup>109</sup> *Public Schools*, page 171.

to pore over every line and word and letter of the Roman writers. There were to be in regular succession accidence, syntax, construing, parsing, composition, versification, conversation, declamations and the same frightful burden of memorizing pages upon pages of both grammar and text. William and Mary was frank in avowing her imitation of the English school for she exacted the same authors adopted in the schools of England. Buried in the charter and statutes of the colleges and schools, in the outlines of study, and in the other historical data, we come across the same proper names on both sides of the Atlantic. We find *Æsop*, *Corderius*, *Caesar*, *Tully* (*Cicero*), *Ovid*, *Virgil*, *Horace*, *Erasmus*, *Eutropius*, *Juvenal*, *Persius*, *Terence*, *Sallust*, *Nepos*, and other Latin writers besides the established grammars of *Priscian* and *Donatus* which had stood the wear of ages, finally *Lilly*, the most widely used one for several centuries.

But American progressiveness while appropriating also made additions. There is a most notable one, the leader in its influence among our Latin helps issued in America. This was the "accidence" of *Ezekiel Cheever*, a little 18mo of something over a hundred pages, showing the steady growth in the importance of the English tongue as it is in that language. It is a very happy condensation of the elements of Latin grammar. But these books are anatomy only that needs the flesh of actual teaching if we are to see what was really done. Fortunately we have a

#### CLASS ROOM SCENE.

"*Circumspicite*," called out the teacher, and immediately the little heads in front of him would be turned from side to side of the room.

"*Imitamini sutorem*" and instantly those who understood would begin to draw threads as the cobbler does in sewing shoes.

Again he would begin to draw the picture of a lion, but



placing a beak on it instead of a head. At once some voice would be heard, "non est leo, leones non habent rostrum."

Thus he would hold the attention of his class by either making figures on the board or by describing some object and having them to draw their conclusions in Latin. As for instance, pointing to the eyes or the fingers or giving them commands so that they would bark like a dog or roar as a wild beast. Thus has good luck preserved for us and investigation presented us this realistic scene of a German school towards the latter part of our colonial period, reviving conditions for us almost as realistically as the vitagraph and phonograph could.<sup>110</sup> This was not a detached example but was the growth of a long series of experiments and was, of course, wafted to America, there to be reproduced.

#### MATERIAL HELPS.

These results were possible because there had been a chain of text-books linking back through time. Early in the middle ages were Latin conversation books, at first in manuscript only. Some of the most important series were evolved by the Jesuits. One of this brotherhood had a very profound plan. He wanted to get a short cut so he prepared a series of brief sentences, some 1,200 in all, composed of all the root words in the language so arranged that no word would be used a second time aside from the simple connectives. He very thoughtfully appended an index so that any word could be readily found. The following specimen will be a fair sample of the whole: Dum malum comedis juxta malum navis, "de malo commisso submalo vetita meditare," or "while thou eatest an apple near the mast of a ship think of the evil committed under the forbidden apple tree."<sup>111</sup>

<sup>110</sup> E. L. Kerr, page 266, describing the school founded by Basedow, in his *History of Education*, 1902.

<sup>111</sup> R. H. Quick, *Essays on Educational Reformers*, page 161.

This quotation typifies both the Latin and the religion of the volume.

ADOPTED BY COMENIUS.

This innovation was seized upon by that comprehensive reformer in educational methods. He improved on the notion, and got out his "Orbis pictus," probably the first illustrated school book among European peoples. He himself had wandered through the mazes of the formal Latin grammar, and felt hot indignation against all teachers as tyrants, and torturers, with the grammar as their chief agent of cruelty. He wanted to save others from what he had suffered, by smoothing the steep ascent, making it so gentle that the top could be reached almost without conscious effort. He designed a little book of several hundred common Latin words with enough of the paradigms to allow of the making of very simple sentences. A second volume was to meet the needs of youths, containing 8,000 words, with some rules of grammar at the end. The third was fitted for the next age above, consisting of treatises and more difficult phrases, to teach elegance of diction. The fourth was to be a thesaurus made up of extracts from the classical authors themselves, showing great variety of expression and of idioms. By ringing the changes on the 800 vocables in 1,000 sentences classified under 100 heads, he believed that the original idea of the Latin root words would easily and permanently find lodgment in the brain of his pupils, and that they in turn by innumerable combinations would be provided with an instrument of speech that would supersede their mother tongue and would make into one family all the educated persons of the western world. Each would be "obambulans bibliotheca," "a walking library." Paradise would thus be regained, he thought.

## AMERICAN IMPORTATIONS OF THE IDEA.

During the first quarter of the eighteenth century there appeared at Boston, in a book of some seventy pages, "sentences for children," which had been originally gathered out of sundry authors by Colman and put into English by Charles Hoole so as to soften the entrance into this Roman atmosphere. It is made up of simple sentences, none over a line in length, in parallel columns, with religion as the chief color through the whole. In one page of thirty-five lines the word God appears twenty-eight times, not counting pronouns.

Corderius had been the popular stuff for cutting such patterns from in the seventeenth century. There is one specimen of this sort running up to some 400 pages, with the two languages in parallel columns.

Just at the opening of the nineteenth century so insistent is the strain after Latin that a new edition of Corderius appears in New Hampshire, a very fortunate circumstance for us as it carries us back to the very beginnings of our colonial education. It is a series of 100 conversational lessons on simple everyday matters, and the following will put before us about as thoroughly as can be done what was actually attempted in Latin lessons during our early years on this continent.

*13th Chapter.*

A. Abiit tuus Pater?

B. Abiit.

A. Quota Hora?

B. Prima pomeridiana.

A. Quid dixit tibi?

B. Monuit me multis verbis ut turerem diligenter.

A. Utinam facias sic?

B. Faciam, deo juvante.

A. Deditne tibi pecuniam?

- B. Ut solet fere.  
 A. Quantum?  
 B. Nihil ad te, etc.

*35th Chapter.*

- A. Quot annos natus es?  
 B. Tredecim, ut accipi a matre. Quot annos natus es tu?  
 A. Non tot.  
 B. Quot igitur?  
 A. Duodecim.  
 B. Sed quotum annum agit frater?  
 A. Octavum.  
 B. Quid ais? liquitur Latine? etc. <sup>112</sup>

This early love still lingers with us. Some of the terms are changed, our mistress has modified the trimmings a little, there may be a different shade of color for the ribbon, but she is the same fascinator to a dwindling group of educators that she was practically to the whole number of admirers centuries ago. One of the latest and most popular of these conversational incentives to the study of Latin is Sauver's "Talks with Cæsar," 1878, constructed along practically the same lines as Comenius trod, but the 200 years had drilled at last some wisdom into the heads of educators. Sauver has not the slightest intention of dealing with daily concerns, he modestly confines himself to repetitions of Cæsar's vocabulary so as to hasten acquaintance with that author.

## FORMAL GRAMMAR.

As a means to an end and as an instrument of distinct mental discipline in its days Latin grammar, with its numerous cases and verbal endings, can be traced back to the sunny days of the mistress of the ancient world. There were ponderous helps of this sort and even Julius Cæsar found

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<sup>112</sup> *Colloquies of Corderius*, Portsmouth, N. H., 1810.

time amid the demands of his epoch-making life to pen a treatise upon nouns and verbs. But this study, as we conceive it now, really reaches to about the fourth century, to Donatus, who continued to be the main authority in this field until he was later in the middle ages superseded in part by Priscian. Both of these were replaced by the verses of Alexander de Villa Dei in his *Doctrinale*. Grammar was largely in the inductive stage as there were no formal rules usually such as were made later.

All three differ as much from their modern successors as a tree trunk does from the cabinet into which it is finally fashioned. Of course all were entirely in Latin. There was no arrangement of paradigms as we now see them, but instead there were directions as to the endings in declinations and conjugations. The rules of syntax were largely the addition of Priscian and he and his followers seemed to be ambitious to multiply the rules as fully as possible, one of them rising to the height of 500 rules, with numerous exceptions. On the other hand, religious devotees, like Gregory the Great, were opposed to all rules as shameful restraints on the Holy language.<sup>113</sup> Ordinarily these books were dictated by the master to the pupils to be learned by heart.

Even the stagnation of the middle ages could not prevent efforts at improvement. One of the most notable of these was a series of text-books devised by the reformer, Philip Melancthon, whose Latin Grammar passed through over fifty editions and whose other works were largely used for nearly two centuries. An influence was, perhaps, wafted over to him from England from

WILLIAM LILLY,

who had made the pilgrimages fashionable at that time, had studied in Italy and had wandered to Jerusalem and was con-

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<sup>113</sup> S. G. Williams, *Medieval Education*, page 59.

sidered well accomplished in all the arts and sciences of his day. "He set forth a grammar which is universally taught all over England," said the old English author Fuller. So acceptable was it to the pedagogues that its fame reached the ears of King Henry, and with the very humane desire to smooth the road of learning as much as possible for the maturing minds of youth, a royal decree commanded that Lilly alone should be studied within the realms of England.<sup>114</sup> It was the foundation for lesser men to build upon and for a century or so afterwards nearly all of the grammars show traces of William Lilly. Locke seemed rather inclined to sneer at such dominion and declared that people "stick to it as if their children had scarce an orthodox education unless they learned Lilly's grammar."<sup>115</sup> It may be that Lilly was wise far beyond his generation and long since saw the value of coöperation, as some editions of his books at least had the assistance of Colet and Erasmus.

He may be said to mark the end of the old era and to usher in the new one of to-day. One of his editions, bearing date about a decade before the Pilgrim Fathers landed in Massachusetts, does not vary to any great extent from the newest ones now. He has the eight parts of speech, etymology, classes of nouns, paradigms, etc. He has syntax and he winds up with a third division, very common at one time, of prosody. Of course it is all in Latin. It may be because of this ancient dress that a Virginia youth sarcastically referred to it as "insipid and unintelligible book," but in later years, with more maturity of judgment, reverses his view and thought it "a complete grammar and an excellent key to the Latin language."<sup>116</sup>

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<sup>114</sup> Fuller's *Church History of Britain*, Book 5, Section 1, page 13.

<sup>115</sup> R. H. Quick's *Locke*, page 139.

<sup>116</sup> *Va. Hist. Register*, Vol. 3, page 145.

## EZEKIEL CHEEVER'S ACCIDENCE.

"He taught us Lilly and he gospel taught" is the double cord that sounded through the ninety odd years of Boston's most famous school master. For a while he literally used Lilly and then he wrote his simple little treatise, which although having 125 rules was a very primer of clearness and brevity by the side of its predecessors. Part of the task of transferring Lilly had already been done by John Brinsley, the greatest school master of King James's reign, who had himself transfused Lilly into a textbook of his own, but Cheever's adaptation was a still further improvement. It is most probable that he also got inspiration from Roger Ascham, whose *Scholemaster* mounts to the level of pure literature.

This little volume passed through some eighteen editions before the Revolutionary War and was popular with teachers even for some time after that. It is, of course, in English, and the most important difference between it and any grammar of the present day is its lack of illustrations of the rules of syntax. It is hardly creditable that so well-balanced a man was carried away by the fad of conversation, at least there are not much signs in his pages of yielding to this weakness as he hammers the skeleton of the language into his pupils. He did it successfully too, as there is testimony that the youth he sent up to Harvard were exceptional in their fitness for the Latin requirements.<sup>117</sup>

He makes no boastful announcement of what he can accomplish, although there were examples before him almost equal to what we can now read in the circulars of correspondence schools or even in patent medicine advertisements of the results to follow from the use of certain aids. A few years before Cheever was born a Londoner had got

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<sup>117</sup> Cotton Mather's Funeral Sermon on Cheever.

out "a practical grammar or the easiest and shortest way to initiate young children in the Latin tongue," promising that a child of seven years old may learn more in three months than his elder brothers could learn in twelve by the ordinary method. But none of these short cuts to knowledge for Cheever, only steady tramping along the well-beaten path for this experienced leader.

But he was hardly learned enough for the colleges and the youth at these centers still mouthed over Priscian and Donatus, which were thought more profound. But through the centuries, after packing away the rules of grammar in the memory, there came the question of applying them so as to train in the power of creation.

#### COMPOSITION AIDS.

After Gutenberg opened the eyes of the world to the possibilities of movable type, numbers of Latin helps came upon the market. Their compilers were in dead earnest in trying to substitute Latin for their daily tongue. They fashioned equivalents for all of the ordinary terms of the time, endearing epithets, vulgar words, as well as more dignified phrases. Not even the wildest Latin maniac of the present would venture upon the flights of those early days. J. Garretson, "school master," gravely set the boys such tempting morsels as these to be turned into Latin:

"My dear cousin offered me a kiss."

"The pretty boy sits between the pretty girls." <sup>118</sup>

There were other implements for this "wooden handicraft," such as Bucklerina's "Thesaurus of Poetical Phrases," *sylva synonymorum* (forest of synonyms), and descriptions by periphrases.

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<sup>118</sup> Pages 12, 16 of his *English Exercises*.



## DICTIONARIES.

Monumental toil was expended in trying to get the Latin complement for every English color. Naturally Cicero's writings were the favorite hunting ground for such prizes. Thomas Drax turned to that everlasting "mouther" of ancient days for "a rich store-house of proper, choice and elegant Latin words," running up to 519 pages. He found thirteen Latin phrases for "to frame or make a speech," but for the idea of uttering words in general he inserts thirty Latin expressions.

The very top-notch of all, a regular drag net for the whole scheme, was Holyoke's Dictionary, in three parts. Hardly any one will dispute that these "phraseological explications" are the "most complete and useful of any that was ever yet extant in this kind." It is a wilderness almost as thick as that of a French idiomatic dictionary at the present. He has 150 pages, four columns each, 50 English items to the column, or a total of 30,000 English terms run into Roman molds. He is recklessly prodigal in the riches he presents. He has 26 illustrations of "cut off," and 23 for "dead" though "dead easy" is not in the list, perhaps not in existence at the time. There are 27 for "shoot," and we are disappointed, although hardly justified, in expecting him to repeat how some Roman sneered at Cicero's readiness to "shoot off his mouth." For "shirt" there are four, and here again we fail to find some of our vigorous talk, such as we can easily imagine Brutus used in the famous quarrel scene with Cassius when he begged him not to "tear his shirt." He doesn't give us the Roman for "a gay old bird," but he comes next to it when he translates "an old lubber playing the boy." Here are 40 expressions typifying "old," but "old maid" is not there, perhaps because she did not exist in Roman days. He does have "charta virgo," and almost gives us the newest manifestation in this direction when he puts "a manly

woman" into Virago, nearly equal to our "bachelor girl." Thus he goes on ranging over the gay, the solemn, the humorous, the slangy, and the obscene. There are plenty of the last that these pages would not possibly bear, but exactly the kind of talk that boys use among themselves to-day when they think no older person is by to hear their vulgarity. This is one of the most significant things in the entire volume and throws a flood of light upon the awful strain that men made in those days to adopt Latin as the living speech.

#### TEXTS.

The roots of all these plants went down into the soil of the Latin authors, Cicero, Virgil, Seneca and other successors under the Christian skies. The originals were used really and literally, but as men fell back from the inaccessible heights of universal Latin speech these pills were sugar-coated with notes. No great advantage to the learner at the start as they were in the Latin of the editor himself, but even this was a concession to the rising tide of common sense in education. Hardly anything better could be achieved so long as these volumes were studied not for literature or for the thought in them, but simply as material for grammar and conversational exercises.

#### PONIES.

These nimble capering animals have rather a long pedigree and very early there were famous men not ashamed to back them. Even that sedate bachelor, John Locke, openly advocated an amble upon these four-footed beasts. He went further and got out an interlineary of Æsop's Fables.<sup>119</sup> He had successors too for Corderius, and Cicero, the latter by that universal genius whom Carlyle has dubbed the "father of all the Yankees," Benjamin Franklin.

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<sup>119</sup> R. H. Quick, *Educational Reformers*, page 238.

Some of the editions differ very little from to-day, being as full and as thin, and as aggravatingly useless on the difficult places, but profuse on the easy passages, as in those we find now. There were some also with special vocabularies and indexes. But the bulk were hard, dull, and, with notes in Latin, as unattainable and vexatious as a feast visible but not tangible. All methods for typographical disposition of notes were in use, both at the sides of the page, at the bottom, and at the end of the volume. There was also that modern trick of parallel columns for the translations and literalness to the extent of being almost word for word.

#### DID THEY GET WHAT THEY WERE AFTER?

Yes, at least some of them did in a measure, especially the professional educators such as those hairsplitting school men. It is largely the fashion to laugh at the barbarisms of those authors but it is very often a reflection upon the critic himself as he does not understand their habitual abbreviations and very often he has trouble to decipher their cramped characters. "The medieval schoolmen sinned no more against pure Latinity than the modern scientific writer sins against English undefiled."<sup>120</sup> Thus the testimony of a competent investigator runs in favor of these much abused people. He goes further and declares "so far as grammatical errors are concerned there are few or none." The specimens of poor work that are often given, Leach thinks, are "the sad hash made by ignorant modern transcribers."

Some of the devotees of the time almost attained the acme of their effort, they almost knew more Latin than they did of their native speech. In the time of Henry VIII Palsgrave reports to his Majesty that there were some at the universities who had profited in the Latin tongue and could write "an epistle latin like and thereto speak Latin" and had attained to a "comely vein in making verses." In fact he goes

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<sup>120</sup> A. F. Leach, *English Schools*, page 106.

on they had become so apt in Latin that they were not able to express themselves easily and naturally "in their vulgar tongue," but he thought this very favorable as he considered Latin "the very chief thing that the schoolmaster should travail in."<sup>121</sup>

#### A PRIG PRODUCT.

Such loftiness above the common herd was pretty sure to swell some heads outrageously. D'Ewes is a sample as we are told that at 15 he made themes, "large and solid" and verses lofty and of several kinds all of which he carefully embalmed in exercise books, not counting nearly 300 Latin and Greek verses that he also ground out. He could complacently record "scarce met with any Latin author, prose or verse, which I could not interpret at first sight" and he also modestly says that he was "able to discourse somewhat readily in the Latin tongue" and trip up his university instructor who was spouting Latin to the class. In some three weeks he made "divers lyric odes" with "anagrams and epigrams," all in an off-hand sort of way as a mere play for him without omitting any of his regular tasks. As if all this was not enough to disgust any reader he piles on it that none of this work was "very troublesome" except "the Greek sapphics." There is one saving point in this autobiography, he says he did not print all of his effusions for which we should be properly thankful.<sup>122</sup>

#### HOW WAS IT IN AMERICA?

Considering the differences in conditions and allowing for the keener material demands of a frontier home the English colonies were reduced photographs of the old world. There

<sup>121</sup> Palsgrave, in report of Bureau of Education for 1902.

<sup>122</sup> D'Ewes (1602-1650), "beau-ideal of an antiquary; with no masculine tastes or interests;" narrow minded, without common sense. Dict. Nat. Biog., Vol. 14, page 450.

was the same violent prolonged yearning for Latin and practically the same measure of victory. Cotton Mather could record very early "the public declamations in Latin and Greek" which the Harvard youth were accustomed to make, as it seemed to him with considerable credit to themselves and to the institution.<sup>123</sup> He himself, naively, seems to have written Latin with a more flowing pen than he did English. He narrates how he found out that those devils who were responsible for the witchery which eventuated in such a horrible manner understood not only Latin but also Greek and Hebrew. He set a trap for the demons by talking in first one then the other of these languages to some afflicted case, thus proving that the poor wretch understood him in each instance while under the spell of the evil spirits.<sup>124</sup>

President Stiles, of Yale, was very ready to give certificates of proficiency in Latin to graduates of Harvard. Of Rector Elisha Williams, class of 1711, Stiles says, "he spoke Latin freely and delivered orations gracefully and with animated dignity."<sup>125</sup> Timothy Cutler, Harvard 1701, "was a noble Latin orator" and "spoke Latin with fluency and dignity and with great propriety of pronunciation."<sup>126</sup> Stiles himself handled Latin "with great ease" though a saving clause follows to the effect that he made minor mistakes.<sup>127</sup>

#### DEMONS OF DISCONTENT.

With practically all the schools babbling at it, with the clergy preaching in it, with the great Lord Bacon disdainful to use any other vehicle for his philosophical ideas, with books being constantly written in it, with virtually all litera-

<sup>123</sup> *Mass. Hist. Soc. Colls.*, Vol. 1, page 243.

<sup>124</sup> *His Magnalia*, Vol. 2, page 464, Drake edition of 1853.

<sup>125</sup> W. L. Kingsley's *History of Yale*, Vol. 1, page 57.

<sup>126</sup> F. B. Dexter, *Sketches*, page 272.

<sup>127</sup> W. L. Kingsley, *History of Yale*, Vol. 1, page 111.

ture in this garment, there should have been the calm of the morning in the intellectual world, but there was not. Instead of such peace, the shafts of censoriousness were flying keen and thick. There were doubts, questionings, grumbings, criticisms, sneers, and all manner of ugly fault-finders not only with the subject, itself but with the method of learning it and with the shrivelled fruits of failure that came from it.

There were especially heavy growls of dissatisfaction with the hard, dry, tedious grammar method of approaching the task. A few observers saw the torture of packing away endless rules and countless exceptions in the cells of the brain. Lubinus, theologian though he was, thought that the ingenuity of the devil had been used to find the best way not to learn Latin, that some ill-omened monks had first devised it so that nothing could come of it except "Germanisms, barbarisms, solecisms, mere abortions of Latin, dishonorings and defilements of the tongue."<sup>128</sup> The oral method, he declared was the key to the situation, as cooks and scullions got more knowledge of modern tongues by mixing with the natives than students got of Latin by years of grinding. Martin Luther had a rough tongue and he could take a swipe with it at the ecclesiastical armor of protection. "Is it not pitiable," he raspingly asked, "that a boy has been obliged to study twenty years or longer to learn enough bad Latin to become a priest and read mass?"<sup>129</sup> He struck a basal cord there which sounded far away in time and space. A German innovator, Ratich, took a noble stand when he openly advocated attention to the mother tongue, rather than such overwhelming stress upon Latin and Greek. In the same country a prince protested against the bondage of Latin and urged German and the sciences instead. Comenius looked in the same direction.

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<sup>128</sup> S. S. Laurie, *Educational Reformers*, page 155.

<sup>129</sup> L. Seeley, page 166 of his *History of Education*.

## LOCKE AND MILTON.

But he and many others including Locke all had serious misgivings about this new departure, they all thought that it would be best to keep this dead speech for the use of the cultivated class. Milton also had his doubts about the matter.

But he and Locke agreed in this that if it was to be acquired the general method was frightfully wasteful in time and energy. Milton sneered at the modicum of tiresome scrapings, the few tags, that the pupils got in one year. Both of them denounced the making of themes, verses, and orations. Locke saw through the whole thing and he felt the emptiness of the entire performance. He said it was all nothing but learning words, "a very unpleasant business both to young and old."<sup>130</sup> He also praised the talking method as the readiest road to the disagreeable goal. With all his acumen and philosophical depth he blundered just like his contemporaries in looking on Latin as a living thing instead of a painted mechanism. The glamour of tradition and the sanctity of sacerdotalism clogged and blunted the sharpest wits of the time.

## BORROWED PLUMAGE.

But not all were deceived. There were a few glittering rapiers thrust through this gaudy mask finding only hollowness within. Montaigne said that the boys of the day were only asses loaded with other people's learning, and forced to keep the path by dint of blows.<sup>131</sup> That profound seer, Comenius, could see pretty straight and he glanced along the same line when he rapped the schools that they did not "train minds as saplings which grow from their own roots, but, on the contrary, have taught their scholars to attach to themselves branches plucked down elsewhere," and like

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<sup>130</sup> F. V. N. Painter, *History of Education*, page 220.

<sup>131</sup> J. W. Adamson, *Pioneers of Modern Education*, page 72.

Æsop's crow, "to dress up in borrowed plumage,"<sup>132</sup> When John Webster, made his onslaught upon education in general, in England, certainly he did not spare Latin as, to him, it was a brake upon the attaining of true knowledge.

All these blows and clash of strife, these skirmishes and onsets, in time made an impression, very slowly at the hoary centers of conservatism, but more swiftly towards the circumference. There was a kind of university extension in London about 1600, lecture courses in divinity, law, sciences as then understood. There was a concession to this swell of opposition as these lectures were delivered in Latin in the morning but in English in the afternoon.<sup>133</sup> In the 18th century the leaven had worked a little more, and professors in the universities began gradually to use their mother tongue in their classes.

#### AMERICA FALLS IN LINE.

The very air of our forests must have carried a kind of freedom into the lungs. We were three thousand miles from the old world and the chain of conservatism necessarily got a little weak. Franklin, Rush, Sower, were among the bravest of us to raise their voices against this devotion to Latin. The same spirit went into the university. In 1763, an instructor at Harvard offered a plea, not to give up the classics, but to improve the method of learning them. He urged the use of English in some of the exercises, and he fought the compulsory making of verses unless the pupil showed some pastoral ability in that direction.<sup>134</sup> A few years later a student wanted to drop both his Greek and Latin authors so that he could put more of his strength upon divinity branches.<sup>135</sup> Still deeper had the light pierced,

<sup>132</sup> J. W. Adamson, *Pioneers*, page 166, quoting from Comenius's *Didacta*.

<sup>133</sup> Jno. Stow, *Survey*, page 65.

<sup>134</sup> Quincy, *History of Harvard*, page 496, Vol. 2.

<sup>135</sup> Harvard College Papers, Vol. 2, page 65, manuscript.



even many years before this. A little after 1700 a memorial had come to the authorities of the Boston Latin School praying for less Latin or quicker means of obtaining it. Poor blundering fellows doubtless, not of the elect class of culture and learning, but nevertheless in an awkward sort of fashion, almost like an ignorant man trying to describe a deep-seated pain, they uttered their grievance. "According to the methods used here there are many hundreds of boys in this town \* \* \* never designed for a more liberal education, have spent two, three and four years or more of their early days at the Latin school which hath proved of little or no benefit to their after accomplishment."<sup>186</sup>

#### ONLY A SMATTERING.

These blunt fellows in Boston about summed up the matter correctly, showing decidedly more judgment than the generality of their educated superiors. More than a century before they voiced their indefinite ache, a shrewd Englishman had declared "there is no one thing, that hath more, either dulled the wits, or taken away the will of children from learning" than their efforts to make Latin.<sup>187</sup> Even if we jump much farther ahead from this point we find the same views. Far down in the 18th century a school teacher, the author of a Latin prose composition in very wide use, bemoaned the little ground covered after all the labor spent upon the effort to learn Latin. "Liberal translations" was the medicine that he prescribed for the slow progress. It seems a mere travesty upon sense that this author felt it necessary to cast a dart of sarcasm at that requirement that boys should talk Latin among themselves before they have attained any tolerable skill in the language. "Absurd" he denominated this practice. He would not say that the "ready and proper use of the Latin tongue" was not attain-

<sup>186</sup> Philips Brooks, *Oration*, page 43.

<sup>187</sup> Roger Ascham, page 185 of his works, edited by Wright, 1905.

able at school but he does come out flat-footedly thus "I never yet knew so much as one instance of its being attained there \* \* \* or indeed anything like it."<sup>128</sup> Early in the 18th century it must have rapidly declined in use. One little evidence is sufficient for us here. Hollis, who endowed a professorship of divinity at Harvard, begged in 1722 that the letters sent from America to him should be put into English as "it is now by disuse too troublesome to me to understand the beauty of Latin."<sup>129</sup>

#### DID THE BOYS TALK LATIN?

Many of their fathers wrote it at one time, in fact all educated ones who wished to keep company with their class did so, but it is rather safe to say that the boys at school did not use this tongue in their everyday intercourse with each other any more than the average boy at school today talks French or German away from the conversation class in these subjects. The universities, the statutes, the faculties, the regulations, all pompously demanded this exercise and then the authorities had the awful problem before them of enforcing the rule. Some of the most dignified of the institutions had to appoint spies, "lupi" or wolves, to report any infractions of the discipline, to haul up the "vulgarisantes" for dropping into their vernacular when away from the hearing of the teachers. The English universities were just as unsuccessful. The great biographer of Milton, Masson, had no doubt that before many years had elapsed after the promulgation of the statutes for the University, great relaxation of strictness had taken place so that there was very little security that the boys would talk Latin away from the classroom. Wigglesworth who got his diploma from Harvard in 1661 regretfully jotted down in his diary about the "boldness to transgress the college law in speaking Eng-

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<sup>128</sup> Page 289 of the 20th edition of his *Latin Prose Composition*.

<sup>129</sup> Harvard Archives, Hollis Letters and Papers, page 29.

lish."<sup>140</sup> There is still stronger proof about the failure to have this Italian dialect imported into America. In 1680 a couple of New Yorkers, Dutchmen, visited Harvard as one of the sights of the locality and they came across a number of boys smoking and yelling in a room. These two strangers were anxious to learn something of this American school and not being able to use English they tried Latin but they took pains to note down in their journal the boys "could hardly speak a word of Latin," so the poor inquirers could learn almost nothing of the surroundings.<sup>141</sup> As we come farther and farther from the early mist of colonial days we find more and more slackness in these Latin requirements. Less than two decades before the battle of Bunker Hill there is a report of a committee that the students at Harvard did very little in the way of publicly using Latin, either in prose or verse or in translation.<sup>142</sup>

#### AVERAGE ACQUIREMENT.

It is hazardous to generalize on any matter of human endeavor continued for more than a century and a half but the main results of this intense devotion to Latin can be substantially indicated. As for Latin conversation among the youth in colleges that can be dismissed summarily as an alluring myth of no more solid foundation than the wild claims that we can hear nowadays of fond admirers who proudly boast that their Latin professor can make extempore Latin speeches as eloquent and as ornate as ever Cicero did, if he should try, but of course he never does. There is no evidence that the average boy during the morning time of our existence in the new world could any more use Latin colloquially than his brother today can converse in French or German after having finished the usual grammar course

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<sup>140</sup> Sibley, *Harvard Graduates*, Vol. 1, page 267.

<sup>141</sup> *Memoirs of the Long Island Historical Society*, Vol. 2, page 385.

<sup>142</sup> Quincy, *History of Harvard*, Vol. 2, page 128.

in these subjects at a college of medium grade to-day. If he could construct a few simple sentences of more than half a dozen words in length with any facility at all, it is very likely he was considered a prodigy among his companions.

For the general run of pupils it was not much better in writing this language. There were prose compositions, there were also translations from English into Latin as regular exercises, there were Latin declamations and salutatories on formal occasions, but that the ordinary youth could express themselves with the pen with any degree of ease and correctness is a proposition not to be maintained for an instant. There were Latin books composed, just as now there are Americans who occasionally write a German or French paper but they are usually very careful to get a native from those countries to revise their communications. They in turn do the same for their classes. Even then when these instructors have had in many cases the benefit of residence in Europe for several years, how many of their students can make a decent dress for their thoughts in ink without the most laborious use of grammar and dictionary? Two centuries and more ago the advantages of getting Latin were far less than these modern tongues and the quatum of attainment was still more unsatisfactory. They did then as they do now, they ground out the stiff formal exercises, with a rare instance of connected discourse in Latin. A few even made Latin verses but practically all went no farther than the disconnected sentences illustrating some grammatical principle.

As for reading Latin authors, not much more is to be said. How many could appreciate the eloquence of Cicero, the sublimity of Virgil, the wit of Horace, or the condensed expression of Tacitus? We can only judge from the course they took among the Latin writers. We have already noted the names of the chief authors in use but it may not be a useless duplication to repeat some of these. The Boston

Latin school, and a private academy of probably the same grade had the following in their list: Cheever's *Accidence*, The *Colloquies* of Corderius, Aesop's *Fables*, Caesar, Ovid's *Metamorphoses*, Virgil's *Aeneid*, Cicero's *Orations*, something of Horace, Eutropius, Castalio's *Dialogues*, Lilly's *Grammar*, and some prose composition.

The curriculum was the same practically in these two institutions and so was the refreshing frankness with which announcement is made of the benefits from translations of several of these authors. Some of them were even in parallel columns and very likely there were interlinearies. These helps are not to be condemned, in fact they are to be commended, but their presence in the course does not indicate a very intimate acquaintance with the language that started from the banks of the Tiber. This is to be said however, that the number of names speaks for a comprehensive feast for secondary schools but then just as now there was an overlapping of college and the training school below. In fact we have testimony from a pupil passing through this private academy about the time of the revolutionary war before he was fifteen and being admitted to Harvard immediately with so much credit to himself that he was confident he knew as much Latin as the boys in the senior class.<sup>143</sup> There is no ground for suspecting that he was puffed up with his own achievement as it was not at all a difficult bar to be leaped for getting into college at that time. For a number of years a boy could walk into Yale with Virgil, Cicero's *Orations*, and some skill in writing Latin. In 1742 Harvard exacted in an examination for association in her work thirty-nine lines in the *Aeneid* and some extracts from two of Cicero's *Catiline Orations*.<sup>144</sup>

Even for grasping the mere thought of these ancient volumes the bulk must have been painfully incompetent. For

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<sup>143</sup> *Common School Journal*, Vol. 12, pages 311-315, Oct. 15, 1850, Boston, Mass.

<sup>144</sup> Peirce, *Hist. Harvard*, page 238.

imbibing the spirit, for breathing the flavor of these master-pieces they must have been hopelessly in the dark. To-day we are embarrassed with grammars, lexicons, dictionaries of reference and allusions, histories, philological investigations of all kinds, and still the keenest and strongest among us will not trust his own powers in a quotation but will hunt up the passage in a translation. With the meagerest appliances, without libraries, without any of that mass of knowledge that the most indefatigable research has given us for a century or so, how could the student of those early years get anything but the barest, dryest husks of life and knowledge?

With only a modicum of conversation, a smattering of prose composition, a residuum of interpretation, inferior perhaps in all three respects, but certainly in the last to what is accomplished at the present day, a very interesting problem comes up as to how the student of today with a multiplicity of subjects gets as much in Latin as his forefathers did who gave almost their whole time to that branch. In our colleges to-day Latin will absorb only one-fourth or one-fifth of the pupil's energy and yet he will go as far in it as his forerunners did who gave all of their power to that task. It is not possible that the natural ability today is three or four times as great as it was two centuries ago. Is the teaching that much better or are the books and libraries that much improved? It is a very interesting line of thought and a partial solution is to be found in the extra emphasis laid upon matters then that are now no longer regarded. Theology was a great absorbent then of mental effort and her handmaid, disputation, helped vigorously to dissipate the brains and time of students. But these two do not cover the entire puzzle. Combined with the enhanced effectiveness of the teacher and the more liberal supply in the laboratory and the libraries they may uncover the most of the causes for this enormous difference but there still remains a vague balance. The finer educational environments from infancy

onward may partly remove that or wholly so but there still is a fascination of speculating whether heredity gives us more brain power than it did the infant far back in the past.

#### THE FAILURE OF THE EFFORT.

The most monumental endeavor in all history to establish a universal speech came to naught. Scholars supported and urged the plan, the schools adopted it, the writers and thinkers were enthusiastic for it, the powerful influence of government was invoked in its behalf, it had the sanction of the church, the weight of authority favored it the whole realm of the intellect was given over to it, and yet only broken fragments of it survive the defeat.

Nor was there any better success in substituting Latin for any of the native languages. It could not even hold what was left of form to it as an inheritance. The people in its very home, in Italy, and its neighbors, France and Spain, refused to lay aside the verbal shapes they had gathered from infancy and exchange them for the terms that had been their ancestors'. With the German, and Dutch, and English, this literary alien was received still more coldly. Nor is it to be marvelled that this imperial mistress was baffled. The task was one of infinite and incredible difficulty. The impressions of infancy, the associations of childhood, twine and grow into the very innermost fibres during our plastic stage and give us the rootlets from which our instincts spring. The trainings of after life may smother these for a time but they last till the end. The will is powerful and may twist and distort but it can never eradicate these deepest bonds of our nature. Aside from mere unreasoning conservatism, both calm judgment and good policy were with the unthinking masses. Their own speech was not as developed as Latin, it did not have the grammatical forms, it was not reduced to a system, but it had what Latin did not

have, it had the breath of life, it was an organism shooting up its tendrils and sending down its roots, growing, expanding into the luxury of twigs and leaves and flowers. The scheme was a failure, and in spite of the noble names connected with it, in spite of the beautiful sentiment running through it, it deserved to fail.

Perhaps there is not in all the weary landscape of the past a single instance of one language supplanting another on a large scale except by the spontaneous action of the great body of the people affected themselves. Such a transformation comes, if it comes at all, insensibly, by gradual swapping of terms, but above all by the scattering of the population throughout a wide extent so that each individual is surrounded and washed by the ebb and flow of the other language. This kind of modification is going on under our eyes in this country everyday and has gone on for a century past. A few enthusiasts in Japan were once intoxicated with the idea of getting English as the medium for the Japanese. The minister of education, Vicount Mori, deliberately argued for this substitution. He was justified to some extent in his fancy. Japanese compares with English about as early German or English compares with Latin. So far as accurate fitting of forms goes English is superior to Japanese just as Latin was to English. But Vicount Mori overlooked the frightful agony of learning another speech even though it might be better than the original. No serious trial was made to carry his speculation into effect but even the mention of it most likely had some part in offending the conservative element to such an extent that his assassination soon came.

We are thus left after twenty centuries of experiment just as we were when the great intellectual leaders set out for an organ of communication for the learned. With the advance of the nations we are in one sense worse off than they were, there are now many more repositories of knowledge, mak-



ing the task of keeping up with the progress of the world far more troublesome than then. But there seems one ray of consolation, that one of all these stubborn opponents of Latin may finally so spread as to be a virtual speech for the educated. This happy result if it comes at all will come through the play of natural forces and not through any deliberate effort. Conquest, colonization, travel, and beyond all, trade, will accomplish a million times more than argument and reason. The competition for material gain may do what the greatest beneficence of religion and authority were helpless to bring about.

But if this linguistic millennium ever dawns, its coming will not be assisted very much by the body of teachers. From the very nature of their labor teachers are conservative. They have to deal with the past, sorting over and rearranging the mountains of accumulated knowledge so as to simplify the process of assimilation by young minds as much as possible. Their thoughts are with the past, they love the road that has been traveled. It is a wrench to their notions to take up something new. The oldest of all the guilds of the brotherhood, the Latin teachers, are the hardest to move. Latin has been fighting a losing battle for two hundred years but that narrowing band of devoted souls follow their banner with fanatic faith. They still mumble and mouth about the spirit of old Rome, the culture, the fountain head of so much of our knowledge. Their logic is poor, their observation faulty, their common sense shrivelled. This inner ethereal sanctum of the ancients is to be entered by painful pounding along the hard desolate path of declension and conjugation and dull syntax, and all to be accomplished within a few years by dictionary and grammar translation of selections from two or three authors. The mists of antiquity are still in their keeping, they are still powerful to affect the conduct and decision of college authorities. Latin is yet an entrance requirement in practically all of our

higher institutions. Humor and ponderous solemnity do not go together. If they did this little tag end of the Roman speech would have been dropped at the college gate years ago, and neither would the windy battle of empty words and terms ever have raged over the proper pronunciation of Latin. The schoolman could never tell how many angels could stand on the point of a needle, can the advocates of Roman pronunciation know anything more about how the Latin words sounded to Roman ears?

#### GREEK.

Greek was an elder peeress sister to Latin, one of the three "linguae elegantes et ingenuae," the fountain head of "art, literature, and science," forming with her companion the double thread from which our civilization today has been spun. It was the source of "literary and philosophical views of the world."<sup>145</sup> Notwithstanding these noble associations, this classical scion fell into disfavor because of the taint of heresy, and the Greek language for ecclesiastical purposes was abandoned by Latin Christendom in the 8th century when the great schism arose between the eastern and western churches. Only the most elementary acquaintance is to be found with this tongue except on the part of some industrious monks. There is record of an occasional professorship in this branch during the middle ages.<sup>146</sup> But it was not until the first faint streaks of humanist revival that any serious attempt was made at the scholastic study of this early speech.

#### THE BEGINNING IN ITALY.

To Italy belongs the credit of leading in this culture, and in her schools were to be found Homer, Herodotus, Xenophon, Isocrates, Thucydides, Demosthenes, Plutarch and

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<sup>145</sup> *Universities and Their Sons*, Introduction by W. T. Harris.

<sup>146</sup> H. Rashdall, *Universities in Middle Ages*, Vol. 2, page 459.

some of the Greek church fathers. A schoolmaster of the period promised to turn out pupils proficient at understanding these writers after twelve months' instruction but we are at liberty very seriously to doubt his word.<sup>147</sup>

#### THE GERMAN START.

Father northward, in Germany, after the chains of bondage were stricken from the intellect under the lead of Martin Luther, there are also evidences of leaning towards Greek in the educational work. Melanchthon provided for it in his far reaching scheme, even to the extent of having Greek plays to be acted by the pupils. He himself was here as in other fields very proficient and prepared a Greek grammar when only sixteen of which there were very many editions.

#### RECEPTION IN ENGLAND.

The infection fled to England but it met with almost the fierce opposition that an insidious disease, such as smallpox, arouses. It is true John Locke very placidly thought that it was necessary for a scholar as being the foundation for all our learning but of no advantage to a gentleman, and even the learned kept it for only a short time. There was room provided for it in the school statutes of Henry VIII but no stress laid upon it. When it asked introduction at Oxford in the early part of the 16th century there was a bitter fight against this new comer by the students who jibed, sneered, ridiculed, abused and even fought with stave and fist against the applicant. Sir Thomas Moore, who died such a pathetic martyr's death, protested against this barbaric treatment and finally the king came to his aid and the royal influence was cast in favor of the fugitive to the extent of allowing those who desired to take up this study.<sup>148</sup> But for nearly a century it was scarcely recognized at Cam-

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<sup>147</sup> *Vittorino*, by W. H. Woodward, page 225.

<sup>148</sup> J. B. Mullinger, Vol. I, page 525 of his *University of Cambridge*.

bridge. There is a faint record of two people about 1600 in one of the colleges being able to understand it.<sup>149</sup> It was indeed difficult to get instructors as there were so few who were at all proficient in this language, but by the time of Milton the Greek authors were read in fragments.<sup>150</sup> Along with Latin and Hebrew, it was one of the three languages to be spoken—so the statutes ran.

#### THE FAINT INFUSION IN AMERICA.

Even before 1700 we can find such an unusual author as Isocrates in the list for Harvard along with the others such as to be found scattered in Italy, Germany, and England, with Yale a close second in this respect, but they meant very little if we are to trust some individual testimony. Far down to the Revolution, Josiah Quincy could note that the requirement for Greek entrance was "slight and superficial" covering Gloucester's Greek grammar, with ability to construe the four gospels.<sup>151</sup> And that too, even when Harvard possessed a font of Greek type which was lost by fire in 1764. At Yale Baldwin discloses the "pony" rides in Homer at a little earlier time than this.<sup>152</sup> The freshman was expected to have read the new testament, and perhaps in the subsequent four years he did very little more in Greek.<sup>153</sup>

An imposing appearance is before us of classes skipping nimbly from Greek to Latin, to English, to Hebrew, and then back again, but a very level-headed Yale president has most likely marred this lovely illusion when he suggests that about all the high-sounding phrase means is the parrot-like recitation of corresponding passages that had been picked out beforehand by the tutor and required to be memorized

<sup>149</sup> Thomas Baker, *St. John's*, page 191; Cambridge, England, 1869, 2 vols.

<sup>150</sup> Masson's *Milton*, Vol. 1, page 66.

<sup>151</sup> *American Journal of Education*, Vol. 32, page 873.

<sup>152</sup> W. L. Kingsley, *History of Yale*, Vol. 1, page 444.

<sup>153</sup> W. L. Kingsley, *History of Yale*, Vol. 2, page 500.

for exhibition purposes perhaps.<sup>154</sup> Most likely this is what President Dunster, of Harvard, meant, in 1649, when he wrote to London about the remarkable proficiency of his students in translating from Hebrew and Chaldee into Greek.<sup>155</sup>

#### WHAT THE SECONDARY SCHOOLS DID.

If it was only a snack in the higher ranges what more than a bite was to be expected in the lower? There were certain authors mentioned in the curriculum of the Boston Latin School and its partner, Lovell's Private Academy. In the eight years of the former the students "dipped into Xenophon and Homer."<sup>156</sup>

In its yoke-fellow there are listed Ward's Grammar, Greek Testament, and two books of the Illiad, with the pleasant confession of a translation, Latin or English. Further, as a postscript, we are informed by a sincere student, "this was all my Greek education at school."<sup>157</sup>

#### VIRGINIA VIEW.

It was the ambition of the educators in this southern colony to reproduce the schools across the water, but Greek must have been the fag end for these efforts. There is not much data to go upon, but one or two witnesses do let in some light upon the estimate of Greek. Two years before Thomas Jefferson penned his immortal paper, a private tutor amuses us by his account of how some of his boy pupils swore at Homer and wished that he had him there in Virginia so that he could kick him as he had been told that Homer invented Greek.<sup>158</sup> Possibly this is a blunt out-crop-

<sup>154</sup> T. D. Woolsey, in *Kingsley's Yale*, Vol. 2, page 496.

<sup>155</sup> *Publications of American Jewish Hist. Soc.*, No. 2, page 75.

<sup>156</sup> Otis, a student, gives this evidence.

<sup>157</sup> *Common School Journal*, Vol. 12, page 311, Oct. 15, 1850, Boston, Mass.

<sup>158</sup> *Fithian's Journal*, page 91.

ping of that tough fibrous boy nature that luckily survives all of the fads of parents and pedagogues and school boards, but it may also be an index to the little time given up to Greek. Six years later a youth wandering from Williamsburg to Harvard was graciously permitted to enter without the Greek requirement on the ground that Greek was not taught at Williamsburg.<sup>159</sup>

It is not to be inferred that the Virginia men and women were behind their relatives in the colder climes northward, as we are aware that not only Jefferson, but many of his compeers knew this language in the conventional way of the times, but there is a foretaste of the higher education of woman today in the knowledge that Margaret Wythe had of Greek which she put to good use in leading her son George through the mazes of this old-world tongue.<sup>160</sup>

#### AIDS IN STUDYING GREEK.

The Greek grammars of the period were fully up to the standard of Latin, and in fact some of them would almost serve at the present day. In dictionaries there was much greater deficiency than in Latin. In fact nearly all of the Greek was learned through the medium of Latin. The notes on the authors if there were any were usually in this Roman garb. To some extent the study of Greek was really another method of approaching the Latin problem.

#### THE SUM TOTAL.

A mere taste of three or four Greek authors at most, with a tolerable facility in the four evangelists of the new testament is about as much as the average student got of that royal feast prepared in that little peninsular in southern Europe centuries ago. All the prodigal wealth of literature, of philosophy, of art that are now at the command of college

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<sup>159</sup> Calendar, Vol. 2, page 140, Mss., Harvard Archives.

<sup>160</sup> *William and Mary Quarterly*, Oct., 1897, page 77.

students were unknown by him. Theology insisted on a modicum and scholarship asked for a tag end. When these two were satisfied the matter was ended.

#### HEBREW.

Hebrew was ranked as the third of the "elegantes et ingenuae linguae," but from sanctity of religion considered the highest of the trio, and also was the least studied. All European languages looked up to it as the mother of tongues and each was ambitious to trace its lineage even to the speech in the Garden of Eden. Proselytism was the purpose of the first efforts towards teaching it. It was urged in the middle ages that this language should be taught at the universities in order that the Jews might be converted. The modern study of it may be said to date from about the 17th century, the stimulus being contributed by Reuchlin who published a Hebrew grammar. There are some traces of instruction in it, but the rudiments only in Oxford and Cambridge, although the statutes required it as one of the three languages to be used colloquially by students.

It was only in keeping with the religious atmosphere at the daybreak of our existence that attention should be drawn by the watchman on the higher points towards this sacred dialect. "How" asked one of these higher souls, "can the redeemed enjoy the thrilling music of Heaven unless they can understand the words that the angels use?"—a horrible deprivation of spiritual delight. As usual, enthusiasm lacked common sense. The unregenerate did not care to come to the banquet even when the road was made plain. A teacher was employed in the Hopkins Grammar School by the middle of the seventeenth century for the triune care of Latin, Greek and Hebrew so that the youth could be prepared to enter college. But the hard practical sense of the early pioneers, full of energy and animal spirits, did not appre-

ciate the glories of Hebrew. The poor tutors at Harvard had a stony path to tread.

#### OBJECTION TO THE STUDY.

Wigglesworth records in his diary on August 29, 1653: "My pupils all came to me this day to desire they might cease learning Hebrew; I withstood it with all the reason I could, yet all will not satisfy them." All teachers will appreciate his unhappy predicament in trying to thrust down the throat of his pupils food that they rebelled against. From sorrow he rapidly dropped into anger and abuse. Less than six months later he begins to refer to "the obstinate unto-wardness of some of my pupils in refusing to read Hebrew," and "spirit of unbridled licentiousness," that "will be the ruin of the whole country;" here again another instance added to the million of the absurd lengths to which the enthusiast in any department in life can go, all the more ridiculous when his zeal is linked with religious fervor. But he does not effect anything in the way of improvement as he goes on to jot down "pupils forward negligence in the Hebrew still much exercises me."<sup>161</sup>

#### JUDAH MONIS.

Here in many other cases Harvard was the scout for educational advance. After teaching Hebrew almost since her foundation, she first established a professorship of the oriental languages and Hebrew in 1764. Judah Monis, a converted Jew rabbi, born in southern Europe, an emigrant to America in 1720, had been in charge of these branches for many years. The course was not compulsory and only a few took up the class. It was perhaps for this that he resigned in 1761. Three years later the full chair was put into effect and Professor S. Sewall was placed in charge.<sup>162</sup> Monis

<sup>161</sup> Sibley, Vol. 1, page 265, of *Harvard Graduates*.

<sup>162</sup> Peirce, *Hist. Harvard*, page 231.



prepared a grammar of the Hebrew language which was ordered to be obtained by all of the sophomores and freshmen at a cost of 14 shillings a copy. In this same enactment on September 30, 1735, freshmen were required to attend Hebrew instruction at the beginning of the last quarter and all other students to attend this work "at such times and so often as the corporation shall determine."<sup>163</sup> President Leverett has preserved this description of the work: "one exercise in a week shall be the writing the Hebrew and Rabbinical, the rest shall be in this gradual method. 1. Copying the grammar and reading. 2. Reciting it and reading it. 3. Construing. 4. Parsing. 5. Translating. 6. Composing. 7. Reading without points."<sup>164</sup> It was perhaps in part due to the influence of Monis that Greenwood, in the first American arithmetic in existence has tables of scripture measure of length and capacity such as:

4 fingers' breadth make 1 hand's breadth.  
 2 hands' breadth make 1 span.  
 2 spans make 1 cubit, etc.

also on capacity he has

4 logs make 1 cab.  
 3 cabs make 1 hin, etc.

#### WHAT WAS DONE AT YALE.

On the early periods we have scanty information but thanks to that cheerful and voluminous diarist Stiles, we can make up a pretty fair picture of Hebrew study about the middle of the 18th century and onward. Stiles overflows with abounding earnestness in the Hebrew cause. He tells of "writing a sermon in Hebrew on *Ezra*."<sup>165</sup> He formed a voluntary class in Hebrew but with what success we do not

<sup>163</sup> Harvard Archives, Mss. College Book, No. 1, page 206.

<sup>164</sup> J. Quincy, *History Harvard*, II, 442.

<sup>165</sup> *Ezra Stiles's Diary*, Vol. 3, page 243.

know. Without being ungrateful to his memory, there may be a dim suspicion that the boys cared no more for it at Yale than they did at Harvard. He had made it an obligation on the freshmen when he became president in 1777, and at the end of the scholastic term two years later he confided thus in his diary: "this month the freshmen have recited Hebrew to me. I began with the alphabet and carried the whole class through more or less according to their arrivals. I divided them into two parts—one have received the first part of the second Psalm; the other and principal part have finished translating the seven first Psalms and parsed the first and part of the second Psalms. I do not find that any class has been carried through one-half so much these many years."<sup>106</sup>

Freedom of choice was about this time allowed as Hebrew was "disagreeable to a number" as Stiles himself admits. But although the influence of the man and the office was great to induce twenty-two out of thirty-nine to ask for Hebrew even the little that was accomplished was a remnant. By 1775 the subject was almost extinct at Yale as the seniors only worried through two or three of the Psalms in Hebrew after a fashion."<sup>107</sup> But even the honor of being instructed by the president of the institution was not enough to sustain the interest although he insisted that all classes should study this divine speech. Towards the end of the century we have it from an old student as follows: "we learned the alphabet and worried through two or three Psalms after a fashion; with most of us it was mere pretense," and this too even with all the students gazing upon the president as a very monument of proficiency "in Hebrew as well as several other Eastern dialects."<sup>108</sup>

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<sup>106</sup> Stiles's *Diary*, Vol. 3, page 350.

<sup>107</sup> W. L. Kingsley, *History of Yale*, Vol. 2, page 500.

<sup>108</sup> Mason, page 11.

## HEBREW GRAMMARS.

Just as with Greek Hebrew was really subservient to Latin originally as the grammars were cast in that form. In that repository of old textbooks which is a mecca to all students of pedagogical history in this country and also indispensable for the investigator of nearly every branch of American history, the American Antiquarian Society in Worcester, Mass., are several of these Hebrew grammars which it is hardly worth our while to do more than refer to here. One of the oldest goes back three years before 1600, London, being yoked with Chaldee, and garbed in Latin. There we also find one by Bennet, perhaps the first in America, being dated 1731 in the third edition, also couched in Latin. We come across one in manuscript, very clear hand, in English, but without date, comprising 100 pages, being an evidence very likely of strict attention to the subject in part and a rather slender pocketbook in another part. The most widely used of all, it is rather safe to say, is the one by the Harvard man, Monis, a copy to be seen in the Boston Public Library. This appeared in 1735, ninety-four pages square octavo, "for use of the students of Harvard," "being an essay to bring the Hebrew language into English." Another Harvard teacher, Israel Lyons, some third of a century later, puts his imprint upon a volume of 83 pages, octavo, with a sketch of Hebrew poetry. Like Monis he has "praxis" or exercises of translation in both ways.

There are other examples of these grammars but they are practically all the same, being only tedious duplications of each other pretty much as Latin grammars are at the present day. The substantials are the same and in these cases they hardly go beyond the rudiments. The whole subject of Hebrew was a harmless hobby of religionists so far as affecting the current of the student body or life. It was a waste of time but hardly more so than many branches at college today, and, then as now, it came at a period when leisure

had just as well be put upon an intellectual puzzle as drawn away in idle chatter and destructive games and pranks.

#### CHALDEE AND SYRIAC.

These two other semitic dialects are mentioned in the course of study of Harvard university shortly after the foundation of the institution was made, the former appearing in the list of second year studies and the latter in the third year. They are not noted in any subsequent announcements, nor has any light been thrown upon their pedagogical use aside from filling space, looking large and sounding learned, soothing the pardonable pride of some scholarly instructor and pleasing the vanity of some one or two students that may have studied them very briefly. The same kind of scholarly display can be observed in the catalogues of institutions a few years ago that put down Sanskrit as one of the studies offered.

## CHAPTER IV.

### THEOLOGY AND PHILOSOPHY.

Latin, Greek, Hebrew, and other ancient languages were to the medieval educator only keys for unlocking the inner court of humanity. As other subjects were added to the slow path of development they also were merely supplementary aids for penetrating to the very core of life, for understanding our existence and for leading us to the other world. Grammar, or Latin, though dealing with pagan poets and church fathers in the effort to write and speak as they did, was for the early teacher only a process of sharpening the mind so that it could "grasp the right sense of the divine words."<sup>169</sup> Prosody was necessary for appreciating the Psalms, rhetoric for admiring the beauty of the Holy Fathers, dialectics to enable the minister to meet and vanquish heretics, arithmetic for unfolding the mystery of the "numbers and measures" mentioned in the Scriptures, geometry for the circles told of in the description of the ark and the temples, music and astronomy for use in the divine service. Theology indeed comprehended philosophy and embraced within its horizontal sweep the whole stretch of knowledge. It of course was based originally on the Bible and then secondarily on the early writers. The method of teaching it was very routine, chiefly to copy, compile, and abridge, to compare passages with one another so as to distill the very essence of their meaning. Dialectical skill was whetted to a keen edge because the basic authority was not allowed to be doubted. Later under the pioneering advances of Aquinas and Scotus theology passed into the Metaphysical stage, an attempt to reconcile the deductions of the sources with the dictates of reason.

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<sup>169</sup> F. V. N. Painter, *History of Education*, page 101.

Where everything converges to one center it perhaps seemed unnecessary to make a special head of that point, or perhaps there were not means for paying special attention to this subject, but at any rate it was nearly a century after the founding of Harvard University before there was established a regular chair of theology. It was in 1720 that Thomas Hollis, the generous English friend of the needy institution, provided by donation for "a professor of divinity to read lectures in the halls of the college unto the students."<sup>170</sup> There were to be two lectures weekly on "positive and controversial divinity," on "church history, on Jewish antiquity," also to cover "cases of conscience" and "critical exposition of Scripture." Hollis himself was very liberal in his views and only stipulated that the Bible was the perfect rule of faith and manners, but when the authorities sought to carry out the terms of his gift discussion broke forth as to the requirements of faith, and the upshot of it all was the absurd test of a belief in the divine right of infant baptism before one could hold position. The lecture was to be preceded by a short prayer and the general scheme was based upon the similar work at the University of Edinburgh.

Of course this subject had been in the Harvard curriculum from the start. In the earliest published scheme, in 1643, we find "divinity catechetical," but thus far it has not been discovered what was actually done. It is a safe presumption that nothing more was attempted than a very systematic drill upon the main doctrines of formal theology, with the chief events of Biblical history.

#### AT EDINBURGH ONE HUNDRED YEARS BEFORE.

The rise of protestantism invigorated education in Scotland, above all religious education, because if a man was to save himself by his own interpretation of the Bible it was

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<sup>170</sup> Quincy, *History of Harvard*, Vol. 1, page 239.

the most solemn duty of life to know what was in the Bible. Even as far back as the middle of the 16th century stress was laid upon theology as one of the important branches of study. With Greek and Hebrew as the base, five years were given to divinity, both testaments being carefully gone over.<sup>171</sup> Less than two decades later divinity students had first to complete four years in the university proper and then take two years additional in their own subject. Soon the enthusiasm of the authorities mounted up so high that a beautiful scheme was unfolded of four years covering Hebrew, Chaldee, Syriac and Greek so as to wring the last atom of thought from the Holy word by a comparison of these different versions. The crown of the plan was a series of lectures on systematic divinity.<sup>172</sup>

On this foundation, by 1600, Robert Rollock developed a famous school of theology, one of the earliest of the times. He included the germs of all divisions of the subject. He dictated analyses of certain portions of the Bible, he discussed general religious topics, he dipped into the controversies with the established church, and he pointed out the application of principles to practice. A score of years later, in 1620, the first chair of theology was established at Edinburgh by the separation of the duties of the holder from those of principal, the two having been combined up to this time. The burden was not a heavy one as the incumbent had to give two public lectures weekly hold "disputes" of his classes once weekly, public "disputes" one a month, have private exercises in Latin, and instruct in Hebrew regularly. Private beneficence was aroused so that donations to the extent of some 1500 pounds came for the endowment of the chair.<sup>173</sup> There was no substantial change for nearly

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<sup>171</sup> Grant, *University of Edinburgh*, Vol. 1, page 63.

<sup>172</sup> Grant's *Edinburgh*, Vol. 1, page 93.

<sup>173</sup> Grant's *Edinburgh*, Vol. 1, page 334; also Vol. 1, page 210; Vol. 2, page 280.

another century, until 1702 when a chair of ecclesiastical history was added.

Fervent zeal had thus experimented with this course of study. Its energy however either relaxed or was turned into other channels, as the learned historian of the institution remarks that for the next 150 years practically no modification or improvement is to be noted. It was still in its vigor when Hollis turned to it largely as his model for the design he had to found such a chair in the new world. So far as we can judge from the meagre data to be had now there was but slight difference between the essentials of the two on both sides of the Atlantic. Both had the Semitic languages as preparatory, both exacted the reading of the Bible in these original tongues, both called for critical and textual study, and both had history.

#### PETER LOMBARD.

But the theology at both, as well as at all other medieval institutions rested upon that wheel horse, Peter Lombard, who died about the middle of the 12th century. His book of "sentences" is the bed rock lying far beneath the mass of commentators that reared themselves upon him. The aim of this giant was to systematize all of the Christian teachings. A job of infinite difficulty he set himself to harmonize the Bible with all of the deliverances of the church fathers, so as to extract the very marrow of knowledge in every department.<sup>174</sup> He has a couple of hundred propositions, each one of which he puts through his logical machine in the way of expounding, amplifying and proving. He shied at nothing, not hesitating to plunge into those snares of trinity, and of predestination. He is really ingenious on the latter, drawing a distinction as fine as a fila-

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<sup>174</sup> H. Rashdall, Vol. I, *Universities in the Middle Ages*, page 57. Also Mullinger, *Cambridge*, page 59. "Sentences" does not mean a grammatical term but the "opinions or tenets" or "truths" or "deliverances" of the authorities. See Mullinger, pages 7, 59.



ment between predestination and fore-knowledge. What the deity himself is going to do is, to Lombard, predestination; what the deity knows is going to happen is fore-knowledge,—a very soothing pacification of omniscience and freedom of the will.

#### OTHER AUTHORS.

Of the men indebted to Lombard for their method and of commentators on the scriptures, there are myriads, but it is necessary for us to take only a few of the more leading ones in use in America. Nonnus and Dupont whose names we see in the courses of study in American institution, had Latin paraphrase and metrical versions of certain parts of the scripture, the former of some of the new testament, and the latter of the Psalms.

But it is of those who attempted to apply logic and scientific precision to theology that we find the greatest literary monuments. Heereboord's *Meletemata* is an ambitious sweep over the whole realm of the known, seeking to connect everything with the theological center. A fat quarto does Richard Blome produce about 1700 by the translation of Anthony LeGrand's *Body of Philosophy according to DesCartes*.

It is two others though that give us the fullest foliage, William Ames and John Wollebius. Ames was some 100 years earlier than Wollebius, and it is to him that Hollis perhaps owes his expression "cases of conscience." Ames's volume devotes its first part to this particular topic. It is really a reproduction of Lombard as the title to one of the parts reads: "the marrow of sacred divinity drawn out of the Holy Scriptures and the interpreters thereof and brought into method." He has a most elaborate outline of some fifteen pages containing such topics as these: "that which may be known of God or his back parts," "God and His essence," "efficiency of God," "creation," special gubernation of an-

gels and men," "man's flesh," "end of world," "virtue," "time of divine worship." Very likely with the first virus of science working in the veins of education came a yearning for something more systematized and condensed hence Wollebius, translated by Ross.<sup>175</sup> A cast-iron logical tree in his treatise, springing from the great tap root that "God is a spirit existent eternally in himself \* \* \* an entity \* \* \* incomprehensible \* \* \* without beginning, without end, without change." With this pregnant premise he goes on with all the placidity of a machine man to crawl over every branch, twig and leaf that can possibly evolve from such a profound depth. He even laboriously settles to his own satisfaction that "marriage is honorable." Natural promptings are at conflict with his basic notions. He wishes to defend war, and yet there are certain passages very troublesome to get over still he settles the matter that it was "pleasing to God, and profitable to the state," and is lawful, because a captain and centurion are mentioned in the new testament as among the faithful.

#### BITING COMMENTS.

In his slashing attack upon the education of his day in general John Webster gave a few sounding whacks at theology. To him it was "but a confused chaos of needless frivolous, fruitless, trivial, vain, curious, impertinent, knotty, ungodly, irreligious, thorny and hel-hatc'ht disputes, altercations, doubts, questions and endless janglings, multiplied and spawned forth even to monstrosity and nauseousness."<sup>176</sup> He is no mere railer snapping and snarling at something he dislikes, but a man of sense and rapier-like insight, although it is not very discernible that he exercised any immediate influence upon the pedagogics of his day. There are some things that cannot be taught no matter how

<sup>175</sup> W. L. Kingsley's *Hist. Yale*, Vol. 2, page 499.

<sup>176</sup> John Webster, *Examen Academicarum*, page 15.

sympathetic and skillful the master, and all those things of the spirit are in the realm of the unteachable. Growth in grace, the purification of the inner life, the elevation of the soul, the gazing upward with the eye of faith, these are matters for each individual to struggle for himself, too tender, too holy, for the rude hand of any outsider to seek to direct and to mold. Webster very quaintly but very correctly puts it when he says: "men and academies have undertaken to teach that which none but the spirit of Christ is the true doctor of."

He almost shrieks out with pain against what he feels was a travesty upon the best part of life, upon the religious nature of man due to this senseless dip into metaphysics. He shouts that "from this putrid and muddy fountain doth arise all those hellish and dark fogs and vapours that like locusts crawling from this bottomless pit have over-spread the face of the whole earth, filling men with pride, insolency and self-confidence, to aver and maintain that none are fit to speak, and preach the spiritual, and deep things of God, but such as are indeed with *Scholastick* and man's *idol-made learning*, and so become fighters against God and his truth and prosecutors of all those that speak from the principle of that wisdom, *that is from above, and is pure and peaceful.*"<sup>177</sup>

John Webster is a melancholy example of a man crying in the wilderness and not being heard by his fellows. But little heed was paid to his warnings, and the schools continued to struggle after the impossible. What a mountain of vain effort, what a weary desert of sad toil might the schools have been saved from if they had listened. but men's eyes were turned in this direction and nothing could stay their feet except the hard impassable wall standing across their path. There is one comforting thought however that though slower and more stupid than dumb cattle humanity

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<sup>177</sup> John Webster, *Examen Academicarum*, page 12.

does in the end learn its lesson. Slowly the tired gaze was turned in another direction and less and less attention paid to theology until it dropped from the regular college course entirely. No longer is it compulsory in any of the 700 institutions of higher learning in this country, although a few do provide Biblical study as an elective. This does not mean to say though that the subject has lost its interest and its power. On the other hand it has gained. No longer forced down unwilling throats it has now been raised to the dignity of a profession, and has its special school just as law and medicine in which those who are going to devote their life to it may receive the discipline that it requires in addition to the regular college course.

In common with education in general there has been a great enrichment of the subjects in theological schools. All of the essentials of two centuries ago have been retained, to them have been attached developments that most likely not even the prejudiced minds at that time dreamed of. Notably among such new branches are the courses on philosophy of religions and comparative religions. The historical branches also have been very much increased and enlarged. In philology and exegesis there has been a most marked advance.

#### LOGIC.

"The use of this iron key is to open the rich treasury of the Holy Scriptures," thus imprinted John Eliot, the apostle to the Indians, on the title pages of his *Logic Primer* in 1672, one of the earliest of all the efforts in print for the salavation of the red men. He was simply in line with the entire trend of the schools for the centuries past. To all educators logic was the handmaid of religion, and guide post along the path to Paradise. Instead of putting his strength upon induction and deduction and upon terminology, he very soon began to discuss such matters as "Gentiles," "elect," "saving," and other phases of theology. With

her elder sister, logic and theology were almost the only subjects in the medieval universities. Every student had to be "aut logicus aut nullus"—either logician or nothing.<sup>178</sup> To the teacher of those days, in the sphere of the intellect it was the center from which everything radiated. One of the authors at a later date summed up his entire volume in the title "Logic or the right use of reason in the inquiry after truth."<sup>179</sup> To the Italian humanist it was the "guide and aid to the study of other sciences," it assisted to "exposition, precision, connection, and clearness."<sup>180</sup> Such sway spread far and long survived, even the master pens of literature yielding allegiance. Far down into the 19th century that queer child of genius and opium, DeQuincy, could see but three methods of training a young man. Logic he ranks first, with languages and the arts of memory following but not the dimmest gleam of any science.

But these earnest educators ought not to be judged too harshly in their emphasis upon this branch of study. Their premise once accepted they were well fortified in their position. The whole of pedagogics at the time and for hundreds of years before was based upon implicit trust in authority. That source as has been said was the Bible. The problem then was very simple. Here in these pages is the totality of intellectual achievement both past and future, it is only necessary to get the correct meaning by analyzing and combining the notions which common language brings.<sup>181</sup> These extravagant estimates upon the importance of logic were perfectly legitimate deductions and her omnipotence remained and had to remain until the foundation stones were disturbed and men accepted additional fountains for the intellectual sources. Throughout these years a synonym was

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<sup>178</sup> J. B. Mullinger, *Cambridge*, page 355.

<sup>179</sup> Isaac Watts, Fourth English Edition, 1731.

<sup>180</sup> W. H. Woodward's *Vittorino*, page 60.

<sup>181</sup> Whewell, *History of Inductive Science*, Vol. 1, page 230.

in frequent use, dialectics, as though one word was not sufficient for the majesty of this monarch.

#### ARISTOTLE.

The giant of the European intellect reached his long strong arm of mental monopoly into every indentation of thought. Either directly or through dilutions and distillations he ruled in every school and class room.

He had epitomized all the world of knowledge in his day and after the revival of classical study his sway was profound and overwhelming. The pious, plodding monk who denied sun spots because he could not find any reference to them in Aristotle is a ridiculous but true instance of the dominion exercised by this great Grecian. It was the same homage in all other branches. In the physical sciences instead of observing under their eyes the scholars and investigators pored over the pages of Aristotle. John Baptist Porta has recorded some of the most monstrous and absurd deductions and directions for scientific experiments to be found in all dignified literature, and yet to him nothing was to be rejected or even questioned if he could find it in Aristotle.

#### BREAKING THE SPELL OF THE STAGYRITE.

Like the sudden bursting of a bomb-shell on a quiet day must have been the defiance of Peter Ramus as he stood before his faculty of the university of Paris in 1563 declaring as his thesis for the master's degree "Quaecumque ab Aristotle dicta essent commenticia esse"—whatever was said by Aristotle is false.<sup>182</sup> All day this youthful David battled with the classical Goliath, finally winning his honor with applause. A rude shock it was to the smock conservatism of the pedagogues when this immature champion shattered

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<sup>182</sup> J. B. Mullinger, *Cambridge*, Vol. 2, page 404. Also Waddington's *Ramus*, page 29.

the infallibility of one of the monarchs of the mind. The onset was too sudden, too radical, too destructive. The crust was broken into fragrants, but the adherents of the Grecian got even with this upstart for disturbing their serene security. They did not attempt to match intellectual weapons with him, but they hushed his voice by physical violence. He fell victim to their brutish rage in the massacre of St. Bartholemew less than a decade afterwards.

But he had pierced a way for the prisoners of authority to escape. He was a John the Baptist for DesCartes and Bacon. Without his epochal assault they could hardly have moved forward.

There is one large volume including virtually all of what he accomplished in pushing forward the march of knowledge. Humanity did not know much then, it was no great task to restate all that was to be found in books. He essayed this and gathered data under such heads as grammaticae, rhetoricae, dialecticae, physicae and meta-physicae and mathematicae. The first ranges over into what we now know as phonetics, and is a rather thorough discussion of the deep principles of speech. There is considerable philosophical speculation of no great value scattered through it. The name of his antagonist appears on nearly every page.<sup>183</sup>

### HIS LOGIC.

His logic only is of interest for our purpose. A small book it was, duo decimo, really might be called "logic made easy," an eminently popular compendium.<sup>184</sup> This modest little essay was a kind of Martin Luther reformer for the province of scholarship in those times. But it is a curious instance of the flightiness of even grave ponderous school teachers that such frightful hubbub should be aroused over a

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<sup>183</sup> The title of this work runs, "Scholae in liberales artes: quarum elenchus est proxima pagina. MDLXXVIII (1578)."

<sup>184</sup> J. B. Mullinger, *Cambridge*, Vol. 2, page 406.

slight thing. Men in the heat of conflict seem incapable except in very rare instances, of judging an event or circumstance in its true relations. It is only after the fires have smoldered into cold ashes when the historian far removed from the purposes of the hour comes forward with his scales and his microscope and carefully weighs the residuum. When the event has lost all of its interest for the great mass of us then the student of the past went over it and compared the two, finding that there was no great difference between them, that Ramus was really only a popularizer of Aristotle. He had simplified the original and had done a good work to that extent. He himself thought he was warring upon Aristotle instead of being simply a convenient edition for him.

But no matter what modifications he made, what wrath he called forth, what blood was shed in the strife, his logic and his fame soon went to the limits of the western hemisphere. Melancthon transported his teachings to Germany, Milton got out his version of the book, with a sketch of Ramus and with prolix notes, within a century a Harvard graduate blessed "the incomparable P. Ramus, "the grand Mr. Ramus in grammar, rhetoric, logic."<sup>185</sup>

#### AN ENGLISH EDITION.

About a half century after his death, 1626, Antony Wotton put Ramus into English dress as "the art of logick gathered out of Aristotle, and set in due form, according to his instructions, by Peter Ramus, Professor of Philosophy and Rhetorick in Paris and there martyred for the Gospell of the Lord Jesus, with a short exposition of the Praecepts by which any one of indifferent capacity may with a little pains attaine to some competent knowledge and use of that noble and necessary science."

The whole is a very faithful parallel of the Latin, which

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<sup>185</sup> Thus wrote Leonard Hoar to his nephew Josiah Flint, then a freshman at Harvard, on March 27, 1661.



begins with "Quid fit logica? Logica est ars bene ratiocinandi. Eodemque sensu dialectica saepe dicta est."—"What is logic? Logic is the art of reasoning well. In the same sense dialectics is frequently used."

The entire volume is as formal and methodical as a Puritan sermon and no doubt it was as interesting to many of his hearers. To him the entire subject breaks into two great heads, invention and judgment. The following taken from his book without the awkwardness of so many quotation marks will serve as a fair sample of the spirit of his book.

Invention deals with the finding out of arguments, showing us the places where we are to fetch the proofs, while judgment is a part of logic touching the disposing of arguments that we may judge well. An argument is that which hath a fitness to argue something. One of the important principles in logic is the distinction between cause and effect. Cause is that by force whereof the thing is, as Mars and Illia, the father and mother of Romulus, were efficient causes of him. Effect is that which cometh of the cause as eloquent orations were the effect of Demosthenes and Tully. The subject is that to which something is adjoined, the adjunct is that to which something is subjected. Now having these matters settled all means of agreement are cause or effect or subject or adjunct.

He then goes into quite a treatment of the different kinds of arguments as opposites, contraries, adversatives, contradictories, equals, the greater, the less, the unlike, etc.

In the second book, devoted to judgment he discusses axioms, or sentences, defining different sorts as simple, compound, general, special, then he gives considerable space to the syllogism which he says is a discourse wherein the question is so disposed with the argument that if the antecedent be granted it must necessarily be concluded. The elements of this instrument of logic he grasps very firmly and explains very simply, treating of the major and minor premises and the conclusion.

## OTHER AUTHORS.

It is a long line of ancestry that logic can claim. The great schoolmaster of Charlemagne, Alcuin, got out a book made up of questions and answers, largely abstracted from Isidore, who in turn had borrowed from Boethius and Augustine. Lombard's ice-like sentences were also material for the chopping machine of logic. Melancthon really dipped into the subject in his works on rhetoric and ethics besides his larger works on logic proper.

There were also Keckerman who was both awfully prolific and dull, Enfield, who really wrote very sensibly on the history of philosophy; Heereboord, Gassendi, Wallis, Brerewood, Ames and Watt. There are two others of more special mention, Brattle and Burgersdicius, both of them in rather wide use among our colonial ancestors. They are a triplet with Ramus, only they are much more similar than triplets ordinarily are. Burgersdicius was honored with an editor, Heereboord who smothered his subject under his own verbiage in a way common with the average editor. All three have substantially the same arrangement, following the same general scheme, treating syllogisms practically alike, giving examples from the Latin versification of "Barbara celarent," etc. All discuss the different phases of the syllogism and all wind up with reflections upon method. Some use question and answer, all are in Latin but there is an English translation of Ramus and perhaps of Brattle.

## AMERICAN MANUSCRIPT EDITIONS.

Old customs like old people usually die slowly. For ages, before the invention of printing, textbooks were passed down by dictation. Even after Gutenberg had placed mankind under his obligation paper was still dear. Under these two influences American students often made their own books as the words fell from the lips of the teacher. The

zeal of antiquarians has unearthed a fair number of these almost entirely in New England. There is one of Brattle's Logic by Joseph McKean in Harvard, with the date of 1765 on it although Brattle had come from the printer's hand seven years earlier.

Still earlier, from the hands of a graduate of 1651, there is a manuscript in the keeping of the New England Historic and Genealogical Society in Boston, by Michael Wigglesworth, based on Ramus. In fact he copies Ramus almost literally but adds comments of his own. He must have been a very industrious and ambitious pupil, perhaps not more so than his fellows, but at any rate there has come down to us in his Latin a resumé of nearly everything given at college such as dialectics, physics, metaphysics, with a specimen of oratory of his own.

A close second to him was Abraham Pierson who afterwards became President of Yale, and, to the torture of investigators, has left a small manuscript volume in the most cramped hand and contracted Latin that has unfortunately survived the ravages of time. He and Wigglesworth evidently followed practically the same authorities as in many places they do not differ so widely. He also ranges over the entire curriculum including logic.

Education for ages past was tested at the conclusion of the course by a thesis to be maintained by the candidate. The same idea continues today in the essays for the bachelors, while the same word and the same principle are actually to be seen in conferring the degree of doctor of philosophy. These short supreme tests then are an index to the whole course of study. One or two illustrations of the earliest at Harvard will indicate some of the conceptions of logic. For instance :

Universalia non sunt extra intellectum.

Universals are not above the intellect.

Dialectica est omnium artium generalissima.  
Logic is the most comprehensive of all the arts.

Methodus procedit ab universalibus ad singularia.  
Method proceeds from generals to particulars.

#### BELLUM INTESTINUM LOGICUM.

This is the sarcastic summary of the whole study of logic in the schools in medieval days, by that frank critic John Webster, the Englishman, "A civil war of words, a verbal contest, a combat of cunning craftiness, violence and altercation \* \* \* trifling, jeering humming, hissing, brawling and the like \* \* \* no regard had to the truth," this is the indictment that he brings against logic. Even more satiric is he on Aristotle whom he contemptuously dubs "the secretary of the universe," and "heathen" who "makes God an animal in his metaphysics and chained him to the exterior superficies of the highest Heaven." Rather narrow prejudice on the part of Webster to attack Aristotle on the intellectual side by wielding the weapon of theological passion but very likely due to the influence of Peter Ramus. There is no good in it to him, only "a vaporous and airy sound of words," even the best original systems leaving the intellect "nude and unsatisfied."

Of the hundreds that acknowledged Locke as a master perhaps not one would recognize Webster. But this towering philosopher, and this harsh judge swallowed up in the fogs of the past, have the same estimate of the value of the school logic. Locke seemed to think it was hardly worth his deliverances as he gave but little attention to it seeing but little advantage in it as the skill of reasoning well was not to be acquired by the study of rules, and reasoning was founded on something else than the predicaments and predicables, and men do not learn how to think by memorizing a system of figures of speech.

## THE DECAY OF THE SUBJECT.

These two men, the prominent and the insignificant, were seers of the future. The schools did not regard them as such, there has been no conscious acknowledgement of their prophetic insight, but logic has dwindled almost to a point in the required curriculum of the best institutions of today. A short course of half a year or in some instances even less, a little handbook of a couple of hundred pages and the student can get that condition checked off from his list. So far are we from the stern demands of the medieval days that everyone must be a logician or nothing, that many now graduate without more than a smattering of a few logical terms.

## ETHICS.

With an environment of piety for the schools, an atmosphere of theology for the teachers, with a saturation of every subject by religion, it was not necessary for much strength to be devoted to formal courses in moral philosophy. Its principles were inculcated in every recitation practically, its very soul was in the air of the lecture and the recitation room. From the first day in school it was filtered into the minds and hearts of the pupils. The Bible was to be read daily, prayers were to be put up, the catechism was rigorously taught and searching interrogations were made of all on the preceding Sunday's sermon. This was the regular procedure on up to the college and in some instances even in the walls of this higher institution.

But in the higher levels of the educational path ethics was dignified as a regular branch of instruction. There were textbooks for it and a prescribed stretch was to be covered. Though coming rather late in our period, in 1765, still President Thomas Clap's little volume is fairly typical of the spirit of this pedagogical division. "Moral virtue in a conformity to the moral perfections of God \* \* \* \* God is a

being infinite and absolutely perfect." So there in a seed is a whole plant of moral philosophy. The problem was simple—just analyze perfection, learn its attributes and cultivate them in your own person. The whole question then becomes one of simple deduction and division, merely an exposition of what qualities are wrapped up in our conception of perfection.

Of course different men would follow a different road and reach a different goal, all starting out with this assumption. In the main President Clap confines himself to very safe generalizations, all impressive and almost colorless, accepted by almost anyone, but we get some insight into his personality by his discussion of lying. He tried to crack that everlasting nut as to whether it is ever right to tell a lie. He uses a very pointed illustration of a man fleeing from a madman and rushing into a house and immediately afterwards coming out by another exit. I tell the madman that I saw his victim go into the house but I don't tell him that the poor hunted wretch came out again. The madman rushes in and while searching through the building his prey has ample time to escape. Have I told a lie? I stuck to the facts though I did not give him all of them. The madman made a mistake in his inference.

The casuist and hair-splitter might be inclined to raise some doubts about the quality of this morality by taking the argument back to my intent when I spoke to the lunatic, but nothing of these fine distractions does President Clap waste his time upon. He cannot for one instant accept any other basis than the one he lays down for morality. He rides over those who attempt to set up any other sanction for conduct as happiness, or benevolence or reason, or moral fitness for things. His treatise was in use for nearly a third of a century at Yale although for a time, during the Revolutionary War, work was largely suspended on this subject.

## OTHER CHRISTIAN MORALISTS.

It is only a thin volume of some 66 pages that he uses for the development of his ethical views. Not much college time was given to it and that usually in the latter two years of the course. There were others of similar character that were also studied. Wollebius who had written so fully on theology also provided something for ethics. Ames, one of the theological authors, had a magazine of material for ethics in his "cases of conscience" in which he made a wide circuit over zeal, faith, sanctification, fortitude, temperance, marriage, conscience, death, etc., each one being ticketed with a text from the Bible. He evidently was not with St. Paul on the question of marriage. The advanced female thinkers of today would hardly read him with much enjoyment as he unflinchingly inculcated the subjection of wives to their husbands. In the first third of the 17th century it was hardly to be expected that the scientific dawn had reached him. At any rate he seriously doubted some of the tendencies of science holding that some things we ought not to try to know since God in his wisdom has not revealed them to us, and there is nothing left us to do but acquiesce in his will. All of them are formal little essays not made up of argument but of rigid statements with scripture references.

## MORE'S MANUAL.

There were other authors of a different shade who, without openly admitting it, seemed desirous of uniting pagan principles with the Biblical teachings. Aside from Locke in use at Yale for a short time, the best example of this class was Henry More who put forth his *enchiridion ethicum* in London in 1679. A rather stiff, ponderous edifice of Latin did he erect, frequently reaching back to Aristotle for a stick of timber, a handful of mortar, or a brick or two.

The general outlines of his structure and the framework of it are very like that old Grecian's product but the Rev. Mr. More in no sense intends for you to believe that he has substituted this "Heathen" for the Bible. He lets it be seen that he looks upon the Hebrew volume as the essence of his book, but the classical reasoning might be a very helpful supplementary wing to the divine revelation.

His architectural lines mount from this base that "ethica est ars bene beateque vivendi," or ethics is the art of living well and happily. This consummation depends first upon knowing what happiness is and second knowing how to acquire it. Happiness is pleasure, but perfect happiness demands some external goods. Happiness depends on virtue which is a quality of the soul enabling it to dominate brute instincts and bodily desires to such an extent as to attain the best. Of these passions some are good and some are bad, but a long list of them does he glance over, such as hope fear, love, hatred, anger, cupidity, audacity, emulation, cowardice, pusillanimity. On the opposite side are the virtues which he also ranges over such as prudence, sincerity, patience, affability, hospitality, gratitude, candor, etc. About one-third of his effort was devoted to the means of acquiring happiness after knowing what it was. This brings him to the question of freedom of the will and here he stands very firmly for individual right of choice.

#### SOME HARVARD THESES.

Though we jump from 1776 to 1700 and then to 1642, to the first year of the oldest college in America, we find even at this educational daybreak in our land that the ideas of these authors were all being laid before the students. In these subjects that the graduates were to develop in public we come across the same general notion.

Voluntas est formaliter libera.

The will is properly free.



Justitia mater omnium virtutum.  
Justice is the mother of all the virtues.

Juveni modestia summum ornamentum.  
The highest ornament for a young man is modesty.

Honor sequentem fugit, fugientem sequitur.  
Honor flees from the pursuer, it follows the fleeing.

Nulla est vera amicitia inter improbos.  
There is no true friendship between the wicked.<sup>186</sup>

ARISTOTLE THE PEDAGOGICAL, FATHER OF ETHICS.

As material for mental growth among the young, Aristotle was a great storehouse for the medieval miners to work in. He was taken up and outlined, divided, sub-divided down to a sentence or even a phrase, or word so that the very last dripping of meaning could be extracted from a particular point and then the same process could be applied to the others. For some of the humanists Cicero was preferred to the Greeks as having absorbed their results and restated them in a clearer manner.<sup>187</sup> Like a vast deal of the teaching then it was very wooden-headed, being mostly memorizing of the stoic tenets. It was largely literary and not practical but that was a defect common with substantially all education. There was in this subject the same jangling and snarling of ideas that was to be found in nearly everything taught in the schools then. There were censors also, pretty fairly represented by Locke and Webster here as in logic. Locke considered the Bible sufficient without any of this repetitious reproduction. This with the practice of virtue and reflection upon Cicero he felt to be sufficient. Webster was hand in hand with his condemnation. He saw

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<sup>186</sup> *Proceedings of Mass. Hist. Soc.*, Vol. 4, page 442, 1858.

<sup>187</sup> W. H. Woodward's *Vittorino*, page 59.

nothing "practicable" in the teaching, it accomplished nothing except to make the subject "facilely disputable, but difficulty practicable."<sup>188</sup>

Here also as in logic there has been a wearing away of the course until in some of our colleges a youth may win his degree without having opened the pages of a textbook in ethics. Even those which require it practically have only a modicum. Does this mean less faith in it or less need for it? Is it no longer of value as an educational performance or has the standard of conduct become so high that it is superfluous to teach ethics? Have we imbibed these principles so that they are a part of our everyday living and consequently feel it a waste of time to philosophize upon something that is with us in every action.

#### PHILOSOPHY.

If possible this term was even more indefinite in medieval days than it is at present. To some it meant logic, to some it meant theology, to others it was the "mater omnium artium," the mother of all the arts, or the "knowledge of all things whether divine or human, their laws and their causes."<sup>189</sup> Again it was sometimes narrowed to the history of philosophy or to metaphysical speculations. For several centuries the whole world of the intellect was divided into three portions as natural philosophy, moral philosophy, and metaphysical philosophy. In the University of Edinburgh logic and metaphysics were yoked as "rational and instrumental philosophy," the first furnishing the basis of investigation and the second furnishing the apparatus for carrying on the search.<sup>190</sup> Logic thus became "the art of arts, the science of sciences,"<sup>191</sup> really the basis of all intellectual de-

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<sup>188</sup> John Webster, *Examen Academicarum*, page 87.

<sup>189</sup> W. H. Woodward's *Vittorino*, page 223.

<sup>190</sup> Grant, *University of Edinburgh*, Vol. 1, page 273.

<sup>191</sup> Compayre's *Abelard*, page 180.

velopment and the circumference of all intellectual achievements. Occasionally other conceptions were added and we find such combinations as moral and political philosophy, the latter subject covering in a general way the whole notion of government, especially as represented in the Roman writers.<sup>192</sup>

#### METAPHYSICS.

With a constant effort to unify all thought it was inevitable that the thinkers should get down to metaphysics, or the sub-stratum on which all of the world might be considered as resting. The constant dialectical disputations assisted this tendency, especially when the contestants began to apply this method to theology. From this the same spirit spread to the other branches until the most material subjects of thought interested men's minds as manifestation of an underlying substance. One of the best illustrations of this general drift is the handbook of metaphysics by Henry More,<sup>193</sup> which he calls a dissertation on incorporeal things. His pages are sprinkled with figures and diagrams just as we see in a modern book of physics to-day dealing with such matters as the pressure of the atmosphere, gravity, magnetism, the planets, their size, their distance, the nature of light and colors, plant and animal life and similar topics. Still the atmosphere of metaphysics is through it all as he is constantly trying to trace these down to their origin in spirit. The influence of Aristotle is clearly apparent as More lays the foundation for Aristotle's ten categories in substance or being, seeking to go down to the very root of all matter. A similar author to More also used in American colleges is Heereboord who seeks out the very boundaries of all knowledge.<sup>194</sup>

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<sup>192</sup> Grant, *University of Edinburgh*, Vol. 1, 274. This was the case in this institution in 1741.

<sup>193</sup> *Enchiridion Metaphysicum*, London, 1671.

<sup>194</sup> *Meletemata Philosophica*, 1665, quarto.

## THE RISE OF SCIENCE.

In these metaphysical conceptions of the observational and experimental sciences we have a rather solid beginning for the later work in these fields. But this general theological robe for a long time was wrapped around the apparatus and laboratory of the scientific investigator. Emancipation came slowly. While still fired with this ambition to unify all knowledge many attempts are to be found at combining all thought in one book. Anthony LeGrand is a fair example of these philosophizers. His "Entire Body of Philosophy"<sup>195</sup> contains logic, theology, demonology, physics, speculative and natural philosophy of the world and heavens, the four great bodies of the earth, water, air, fire, living things in general, man physically and spiritually, esthetics, natural history including both plants and animals, and a discussion as to whether animals have souls.

William James Gravesande, coming afterwards, represents a slight advance as he entitles one of his works "Mathematical elements of natural philosophy."<sup>196</sup> He acknowledges his debt to Sir Isaac Newton and along the same grooves are the teachings of Martin, who was used as a textbook at Yale for twenty-eight years.<sup>197</sup> His philosophy springs from medieval pietism as he announces it is "greatly subservient to revelation especially that of the Christian religion and easily accounts for or removes most of the difficulties and disputations about it." Saturated with this religious cordial he drifts to what we understand as physics to-day, covering such matters as electricity, the working of a pump, the use of a microscope and other topics in that field.

He was succeeded at Yale by Enfield who also included in

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<sup>195</sup> In Latin, 1680; English, 1694.

<sup>196</sup> Latin originally, translated into English and published 1738, London.

<sup>197</sup> Stiles, *Diary*, Vol. 3, page 312.

his wide grasp the history of philosophy. This is really a pretty full detailed history of the subject by a man of some power of individual thought as he shows rather scant respect for some of the vague speculations of philosophers. But when he comes to science proper in his "Institutions of Natural Philosophy"<sup>198</sup> he becomes an unfortunate reversal to the age-long credulity of his predecessors. He sneers at the experimentalists because so few of them ever become philosophers and it is these gentlemen alone that arrive at general truths. Chemistry for him has no attractions as not sufficient data had been gathered for him to digest into his system. Naturally he is deductive almost entirely in his discussions and has propositions almost as formal and as exact as the steps of a proposition in geometry. Starting with the nature of matter he ranges over all of the present branches of physics such as mechanics, pneumatics, optics, then going as far as astronomy. In the last we begin to see a faint ray of the modern scientific spirit on the subject of comets. Here he advances no theory and is not overwhelmed with amazement at the appearance of these mysterious bodies in the heavens. He is a type of the universal genius as he dipped into biography, history, elocution, hermeneutics, and also preached funeral sermons.

#### THE SHAFTS OF A CRITIC.

Though he had so far as can be judged now but little more influence upon the prevailing conceptions than a gentle whisper has against an enwrapping fog bank, John Webster let fly his darts at these formless metaphysical notions. To him they were "so many monstrous, fruitless and vain chimeras \* \* \* fit for nothing but to ensnare and entangle \* \* \* \* vain dreams filling and feeding the fancy \* \* \* \* the assistance of its twin logic (both sisters of the same mother NOX) \* \* \* \* poisonous cockatrice eggs that it hath

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<sup>198</sup> An edition came out in London in 1785, large square octavo.

hatched, \* \* \* \* as little purpose as the disputes DE LUNA CAPRIMA, or moonshine in the water."<sup>199</sup>

### RHETORIC.

With all of the intellectual energies devoted to so formal a study as Latin for centuries, with minute attention paid to every turn of a phrase and every form of a word, with the keenest analysis of all of the machinery of speech, rhetoric was a necessary development and the great Roman orator and stylist was the original exemplar. It was to Cicero then to Livy and to other Latin authors, then past these to Aristotle, that the school masters pointed their students for the best specimens of prose writings. It was, instead of being merely academic as with us at present, a very practical matter to the medieval student. He had to know the proper forms for drawing up legal documents, state papers, business communications, items of affairs, social letters, and all other means of expressing ideas upon paper in an authoritative way. To be a secretary to some learned man, or to carry on the correspondence of some baronial lord, or to transmit the measures of the church, required a certain knowledge of the proper routine channels for the matters to go forward in. It was one of the most direct and useful results of medieval training to be able to conduct such transactions in the usual style.

It is to this early period that we can now trace all of the elements of the ordinary missives that pass through our mails. Those laborious toilers centuries ago had hammered out the divisions that we now unconsciously cast our thoughts into whenever we wish to fold our ideas into a neat package enclosed in an envelope to-day, such as *salutatio*, *captatio*, *benevolentia*, *narratio*, *petitio*, and *conclusio*.<sup>200</sup> It will be noted that this roughly corresponds to the parts that

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<sup>199</sup> John Webster's *Examcn Academicarum*, page 84.

<sup>200</sup> S. S. Laurie, *Rise of Universities*, page 60.

textbooks of rhetoric at the present day break up a letter into, namely, heading, salutation, address, body, conclusion and signature.

Finally all of these different items as they had been painfully raked together through the preceding ages were rearranged and beaten down into simple manuals of rhetoric containing the elements very largely in the form of definitions. It is such textbooks as these that we find in the colonial institutions. Two of the best illustrations are William Dugard and Thomas Farnaby. Both of these were very popular, and one of them went up as high as the fourteenth edition at least. Dugard's was only a primer of some thirty or forty pages duodecimo, but in these limits he covered elocutio and pronuntiatio so as to give some directions about the management of the voice and of the limbs in the way of gestures, all in the approved method of that day by question and answer. He had all of the figures of speech such as synecdoche, metonymy, simile, metaphor and the other less common ones. Farnaby covers the same ground but has more in the way of illustrations and examples, approaching more nearly to the rhetorics that were in such wide use half a century ago. In fact if such a book as Quackenbos should be sweated down from its ordinary swollen stage until only the thinly clothed skeleton remains we should then have a very fair picture of the colonial rhetoric.

## CHAPTER V.

### GEOGRAPHY, HISTORY AND MODERN LANGUAGES.

Columbus was the greatest inspirer for the study of geography that the western world has ever known. Until he made his momentous voyage across the Atlantic men's minds were circumscribed to the little European area and its shadowy limits. That brief outline of pedagogues, the seven arts of the trivium and quadrivium, hardly provided for geography at all but it was really wrapped up in mathematics. Capella covered the field in the sixth book of his encyclopedia which was almost the same as geometry, dealing with the mathematical features of the earth. Later on there were compends of ancient and modern geography in use at some of the universities, notably, Edinburgh.<sup>201</sup>

The impetus from the nautical pioneering of Columbus and his successors echoes in Sebastian Munster's Cosmographic, a type of simplicity, childishness and pedanticism almost universal in all books of the time touching upon nature.<sup>202</sup> Besides his account of the sailing trips of Columbus and Vesputius, he branches out rather luxuriantly on East India and the nearby islands, all under a number of small heads such as

Of the adamant stone otherwise called the diamant.

Of the cannabals which eat men's flesh.

Of the Islands of Bornei.

A few expressions culled from his description of the Island of Sumatra will give far better than any other way a miniature of his general style. Thus he goes: "four kings crowned with diamonds; \* \* \* exceed all other

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<sup>201</sup> Grant, *University of Edinburgh*, Vol. 1, page 266.

<sup>202</sup> Originally in Latin, but in English in 1553 in London, reprinted in part at least by E. Arber in 1895.



men in bigness of body;\* \* \* one hundred years of age ;  
\* \* \* inhabitants are great fishers on the sea ; \* \* \*  
whales seem like unto hills ; \* \* \* sometimes swallow  
whole ships with the men." Of the products he dilates  
widely on the pepper tree. The alligator to him is a snake  
with four legs.

But it is when he goes into a logical explanation of some matter that he exhibits his scholarship and his weakness. He wanted to settle whether people lived in the torrid zone or not. He falls back upon the ancients first raking through the list of them including Silvius, Eratosthenes, Polybius, Posidomius, Homer, Macrobius, Albertus, Ptolomeus, Pliny, all in less than two dozen lines. As for his own views he is as illusive as a doubtful diplomatist, admitting and qualifying and bolstering up on the other side with wonderful nimbleness—yes, it is hot there, but then shade is thick there ; "wilderness and desolate places there," but also much moisture and dew ; any how it is a wide space there and besides Pliny says travellers went there before his time and that there were cannibals there. And that is about as near as Munster commits himself to deciding disputes.

The teacher had to come to systematize these rubbish piles of knowledge. Keckerman one of the great arrangers of the time, put his hand to the difficulty. He turned out a wooden headed product, tedious and formal, mostly definitions, all in a series of statements, usually numbered, without logical connection or orderly development, in Latin of course. But a translation of one or two items will illustrate his results—"a river is either steady or torrential, a river is steady which glides with equal flow." His first half is largely of this sort but his second has descriptions of different countries, scarcely more than their boundaries and the nautral features of land and water. He also was fascinated by the idea of the tropics but he took the ground that whoever lived there in America were terrible cannibals.

LeGrand is another sample of the amusing groping ignorance with regard to natural phenomena. He wanted to unlock the puzzle of no rain in Egypt and he did so by going down to mother earth and declaring that the ground was of "such close and compact texture as not to have pores large enough for the transmission of vapors." We get another insight into his mind when he seeks to show why rain drops are round. His metaphysics and his theology come to his assistance because, he says, heavenly globuli pound on these drops so as to drive all the parts towards the center, while the globuli within are always butting outwards and thus these two get a round shape to the drop. The air of course is always full of these globuli flying about in all directions and they are less liable to hit spherical bodies than jagged ones.

#### NOT MUCH GEOGRAPHY IN AMERICAN SCHOOLS.

Though the innocent cause of great development in this branch, America could not spend much energy upon the study of it. It is doubtful whether it was much more than a pleasant recreation around the fire-side at home for the youth of the land until they reached the higher grades of the common school or entered the colleges. Even there scant attention was its portion. The Boston preacher who revived such pleasant flavors of pre-Revolutionary schools and Noah Webster who can be so safely accepted both were unable to remember any geography in their youthful school days. So it was in Pennsylvania according to the educational historian of that state.<sup>203</sup>

But there was deep interest in the matter among some at any rate. There was much ingenuity in devising orreries and planetariums, some of them of great size and intricacy.

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<sup>203</sup> *Common School Journal*, Boston, Mass., Vol. 12, page 312, Oct. 15, 1850. *Barnard's Journal*, Vol. 26, page 195. Wickersham, *Education in Penn.*, page 201.

President Clap of Yale made such an apparatus for his institution "to represent the motions of all of the celestial bodies." According to the specifications of it it seems to have had a globe for the sun in the center and wire orbits around that with balls on them for planets. These again were encircled with small globes for satellites. There were also some attachments for comets and eclipses and all of this mechanism cost less than twenty shillings or five dollars at present.<sup>204</sup>

While the branch was not dignified with a space to itself in the curriculum, instruction was often afforded under mathematics or astronomy. It was very easy to connect with either one of these subjects by starting out with the earth as a planet.

Whether for this reason or not there was no lack of textbooks, which are to be found preserved in American libraries and the only sensible conclusion is that there must have been use for them in the schools. In addition some are named in the courses of study.

One of the earliest was Clark's "New Description of the World."<sup>205</sup> This is not at all a poor book especially for the times, composed of simple descriptions of the different countries, the physical features, the people and the products. He is not a mere lifeless copyist as witness one quotation on the Indians of Florida: "The women upon the death of their husbands cut their hair close to their ears and not marry again until it has grown sufficiently long to cover their shoulders (a very commendable way if used amongst us to prevent our over hasty widows who are frequently provided beforehand.)"

Another a few years after was by Hubner, "New and Easy Introduction to the Study of Geography,"<sup>206</sup> all in

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<sup>204</sup> *American Magazine*, Jan., 1744, page 202.

<sup>205</sup> London, 1712, 12mo, pages 220.

<sup>206</sup> 1742, 12mo, 271 pages.

question and answer as he thinks that "the most excellent as it is the most natural" way. As a consequence of following that plan he shows but little more sequence or reason than a parrot does in shouting out expressions it has learned.

#### GORDON'S GEOGRAPHICAL GRAMMAR.

But perhaps the one most widely known and adopted throughout our colonies was "geography anatomized or the geographical grammar, being a short and exact analysis of the whole body of modern geography after a new and curious method," by Pat Gordon, M. A., F. R. S.<sup>207</sup> But this is not one-tenth of what Mr. Gordon crowded in his little page. Farther on he unblushingly introduces his volume as "a compendium of the true fundamentals of geography digested in the various definitions, problems, theories, and paradoxes; with a transient survey of the surface of the earthly ball as it consists of land and water," and still farther he assures us that all of his work has been "collected from the best authors and illustrated with divers maps."

The whole book is broken into five parts as follows: first all those terms necessary for the right understanding of the globe; second all those pleasant problems performable by the artificial globe; third, divers plain geographical theorems deducible from those problems; fourth, paradoxical positions in matters of geography or a few infallible truths in masquerade which may appear to some as the greatest fables; fifth, transient survey of the whole surface of the terraqueous globe.

He elaborates each one of these. Among his terms he defines zones, poles, equator, islands, mountains, etc., covering twelve pages.

Under his problems he has such as "to know by the globe when the great mogul and the czar of Muscovia sit down to dinner." These problems run up to forty-eight in all.

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<sup>207</sup> London, 1730, 8vo, pages 416, 12th edition.

His forms mount to forty-one fairly typified by such as "to all places lying between the torrid zone the sun is duly vertical twice a year; to those under the tropics once; but to those in the temperate and frigid never." Again "in all places lying under the same semi-circle of the meridian, the hours of both day and night are always the same in one as in the other."

He tells us that some of his geographical paradoxes are amazing and we can readily imagine the stupefaction on the faces of some boys when they met this example: "there is a certain place of the earth, at which if two men should chance to meet, one would stand up right upon the soles of the other's feet, and neither of them should feel the other's weight, and yet they both should retain their natural posture." Another, "there is a certain place in the Island of Great Britain where the stars are always visible at any time of the day, if the horizon be not overcast with clouds." He has forty-five of these gems for both teacher and pupil to try their wits upon. But he assures us that though they may appear as fables yet there is no demonstration in Euclid more unfallibly true than these paradoxes.

The bulk of his entire book is given up to descriptions of the different countries under the heads of situation, name, air, soil, armies, commodities, rareties, archbishoprics, bishoprics, religion, universities, manners, language, hygenic conditions, but his most characteristic topics are manners and rareties. Under manners a few crumbs will give some taste. Of the Muscovites (Russians) he says "men of a vigorous and healthful condition \* \* \* a rude deceitful and ignorant sort of people \* \* \* a piacular crime \* \* \* to search after knowledge \* \* \* brutish temper and stupidity."

The Dutch are "reckoned none of the politest sort of people either in thought or behavior \* \* \* singular

neatness of their houses \* \* \* wonderful genius to a laudable industry."

The Japanese are "generally of a tall stature, strong constitution, and fit to be soldiers \* \* \* naturally ambitious, cruel and disdainful to all strangers."

It might be remarked here that although written nearly two hundred years ago he managed to hit off some of the prevailing traits of character that these nations have shown since then.

Under the head of rareties he finds in Russia a strange "melon" that grows a skin and wool just like a lamb so that no man can tell the difference between the two. New England has a rare Troculus bird with "sharp pointed feathers in his wings by darting which into the wall of a house he sticks fast and rests securely" but so grateful is he to the landlord that he always leaves behind in his nest a bird as thanks for the use of the property.

It took some years of this kind of geography before America developed authors of her own. The first and the most famous of these was Jedediah Morse but for the purpose of this study he is hardly available as his book did not appear until after the Revolutionary war. It is said that he was stimulated to do this as a correction of the errors in a popular book by Guthrie, some of whose editions at least appeared in London. The temperament and style of Guthrie are indicated by the following extract on Connecticut: "The men, in general throughout the province, are robust, stout and tall. The greatest care is taken of the limbs and bodies of infants, which are kept straight by means of a board; a practice learnt of the Indian women, who abhor all crooked people; so that deformity is here a rarity. The women are fair, handsome, and genteel, and modest and reserved in their manners and behavior. They are not permitted to read plays nor can they converse about whist, quadrilles or operas; but it is said that they will talk freely

upon the subjects of history, geography, and other literary subjects."<sup>208</sup>

### HISTORY.

In the first course of study that we have of Harvard, there sits history serene and confident as any of her sisters in the intellectual galaxy but what was actually included in this term, or what was done in the class rooms, there is almost nothing to be learned. Negative evidence is very tricky to trust but if a long laborious search yields no results we are reasonably justified in believing that there was very little history taught. A century and a half afterwards we have the word of that veteran of letters, Noah Webster, that in the schools so far as he knew them before the Revolution there was no history.<sup>209</sup> The pioneer prospector along this belt, H. B. Adams, who was also one of the first to introduce modern methods of historical study into America, found also no pedagogical nuggets of history in Harvard, and consequently throughout the colonial period as he found substantially no advance of this subject at Harvard for nearly two centuries after her foundation.<sup>210</sup>

But our ancestors had appreciation of this muse. We know our public men were rather diligent courtiers. Jefferson, Adams, and others not so prominent, showed considerable acquaintance with certain events of the past. Adams drew from this arsenal considerable munitions in defense of our triple division of government, going back with sure tread to Grecian experiments in republican government.

There were instances also in the educational profession. Fisher is a specimen of how history was often one of the ingredients in the intellectual hodge-podges so cherished

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<sup>208</sup> Guthrie, *Geographical Grammar*, London, 1792, page 797.

<sup>209</sup> Barnard's *Journal of Education*, Vol. 26, page 195.

<sup>210</sup> *History in American Colleges and Universities*, U. S. Bureau of Education, Circular No. 2, 1887, page 15.

for hundreds of years. In his "Young Man's Best Companion" he gives up twenty pages on remarkable events and short abstracts of the past. He smelted English history down to a few words for each reign, dealing out such tit-bits as the one on Edward third that he built the castle of Windsor, and one about Mary that in her time a barrel of beer with the cask included cost only six pence, but he was not altogether wooden-headed, he had some spice in him, he declared that the people of England during the Cromwell era were "stark mad with bigotry and enthusiasm."<sup>211</sup>

Infinitely higher and more helpful to the real cause of history were the histories composed by such men as Mather, Bradford and Hutchinson, in New England, and Jones and Stith in Virginia. Professor Hugh Jones down in William and Mary wrote a history of Virginia by 1722, the professorial progenitor of the theses and monographs that have burst forth with such prodigality in the last quarter of a century. Within a score or so of years he was followed by Rev. William Stith, perhaps the second of these pioneers.<sup>212</sup>

#### THE LIGHT FROM EUROPE.

There was the weight of tradition, the endorsement of inheritance, and the solemn advice of the seer in favor of this subject. Textbooks running back to the 5th century were at hand. Orosius at that time had condensed the annals of the universe and later his pages became the school history of the middle ages. The humanists, with their taste for beauty and ease naturally preferred those authors with facility of style who could inculcate lessons of right conduct especially in public affairs. They went back to classical days, doubting no statement provided it was couched in eloquent language and disdaining such vulgar propinquity as history nearer to them than three or four centuries.

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<sup>211</sup> Page 329.

<sup>212</sup> *William and Mary Quarterly*, Jan., 1898, page 179.



Locke looked upon history as "the great mistress of prudence and civil knowledge," the proper study for "a gentleman or a man of business." But unless the pupil learned something from it of value in molding his character or in shaping his deeds he had far better put his thoughts upon something else. A mere bundle of facts, to Locke, was just as unprofitable even though about Caesar or Alexander as so many baseless statements about Robin Hood, or the seven wise masters.

But words of wisdom fell on heedless ears with such textbooks as were provided, even though a lectureship had been established in Cambridge as early as 1628, with the stipulation that the incumbent should be well grounded in Latin and Greek and should have neither wife nor child. There were books packed with figures, tables, and genealogical trees, looking such heaps of confusion at the present day as brush piles in a new ground and serving about the same end, only incumbrances to be burned as quickly as possible. Dry, dogmatic, utterly dull and uninteresting, indigestible except for the strongest stomach, even if there had been time in the curriculum for this study, only the most hardened antiquarian could feel any real interest in the matter. It goes almost without saying that they were all steeped in the prevailing theology, tracing all the past back to "the slime of the earth" that Adam was supposed to have been created of.<sup>213</sup>

#### ENGLISH.

Latin was an imperious beauty that strove to monopolize the whole stage in the drama of learning. She was not entirely successful but she did crowd her English sister over into the obscure corners for a long time. There were gallant admirers for English who vainly tried to stay the tide of neglect and contempt. Mulcaster who was born a little

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<sup>213</sup> Two good examples are J. H. Alsted, *Thesaurus Chronologiae*, 1650; and Helvicus, *Chronology*, 1687.

more than a third of a century after Columbus discovered the new world, stood up manfully for his mother tongue. "But why not everything in English, a tongue in itself both deep in meaning and frank in utterance? I do not think that any language whatsoever is better able to express all subjects with pith and plainness,"<sup>213</sup>

Locke was still warmer in his praise of English, still more insistent that it is English an English gentleman should chiefly cultivate because that is the language he will have constant use of. Let scholars toil over Latin and Greek and other foreign languages but a child should be taught the speech that he will have to constantly work with the balance of his days. ~~X~~Regretfully he found this branch universally neglected because teachers thought it below their dignity to attend to the every-day expression of their pupils. Latin and Greek were the only linguistic forms worthy of pedagogical notice, as English belonged to the "illiterate vulgar." Forestalling the future by some two centuries this bachelor, who had almost never known a mother's tender care, who had scarcely any playmates in his youth, almost outlined the present course in English that has been so developed and emphasized in the last quarter of a century. He urged the advantages of narratives and he called for the application of the precepts of rhetoric, sorrowing that the little learners of his day had never yet learned how "to express themselves handsomely with their tongues or pens in the language they are to always use." This facility, as he very clearly saw, was to be acquired "not by a few or a great many rules given, but by exercise and application according to good rules, or rather patterns, until habits are got."<sup>215</sup> After amplifying the importance of story telling for giving ease of style he points out the usefulness of letter writing, but with rare good judgment condemns all straining after effect, limiting the

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<sup>214</sup> Mulcaster, *Educational Writings*, Oliphant edition, page 189.

<sup>215</sup> R. H. Quick's *Locke*, page 163.

whole matter to the purpose of expressing "their own plain easy sense."

Strange it was to him that this indubitable duty had been overlooked while the brain was racked with Latin themes and verses, but he resignedly remembers that "custom has so ordained it and who dares disobey," besides many of the teachers were unfit for the task, and even of those who were of sufficient skill their efforts would all be nullified by the ignorance of the parents at home.

#### GRAMMARS.

The writer and the thinker were not alone in their defense of the vernacular. The eloquence of the pen and the wisdom of the sage were reinforced by the practiced rules of the grammarian. It can hardly ever be known whether J. Wharton, one of whose books is now in the American Antiquarian Society, having been printed in London in 1655, was ever used in American schools, but it is a fair presumption that either it was or it furnished the basis for subsequent ones. At any rate, at that early date, so impressed was he with the good of this educational subject that he issued his English grammar "containing all rules and directions necessary to be known for the judicious reading, right speaking, and writing of letters, syllables and words in the English tongue, very useful for scholars before their entrance into the rudiments of the Latin tongue." Manfully does he back up Locke in calling for the exercise of good English as well as of good Latin, as it is capable of any "scholar-like expressions." But the mold of medievalism is still upon him as he sets forth his efforts to aid the study of Latin so as to assist a boy in turning English into Latin. His 109 pages are largely taken up with rules for spelling and with explaining the parts of speech, but he avoids that grammatical snare of the subjunctive mood. Neither does he have syntax or rules of parsing.

Nearly three-quarters of a century later a more ambitious attempt is put in type, "a grammar of the English tongue, with the arts of logic, rhetoric, poetry, etc., also useful notes giving the grounds and reasons of grammar in general."<sup>216</sup> This contains the elements of syntax without parsing, without formal rules, really an essay in philology, arguing very stoutly against the Latinizing of English grammar.

A decade later there comes from the press another that was thumbed by American children, Isaac Watts's third edition in 1776, of "the art of reading and writing English." Although nearly two centuries old the heart of the teacher to-day will warm towards Watts because he speaks so feelingly of the bad spelling in his day—"how wretchedly is it practiced by a great part of the unlearned world." We are prepared then to know that the most of his strength was laid upon this torture, with some portion to reading, which with him was really our elocution of to-day.

Of the same horizontal comprehensiveness is Benjamin Martin's "introduction to the English language and learning in three parts."<sup>217</sup> He also covers logic, which he divides into the old four classes of preception, judgment, reasoning, disposition. With this as the center he radiates over all knowledge.

Our animosity to the mother country had not yet reached a violent stage or we should most probably have objected to the word British as a part of the title of "an essay in four parts towards speaking and writing the English language grammatically and inditing elegantly."<sup>218</sup> The author follows the prevailing custom for school books, of question and answer, giving up half a page to the parsing of one noun.

All of these yielded very submissively in popularity to Lowth, several of whose editions are to be found in that

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<sup>216</sup> London, 1714, 12mo, 264 pages.

<sup>217</sup> London, 1776, 18mo, pages 228.

<sup>218</sup> London, 1768, 12mo, pages 155, second edition. To be found in the J. C. Brown library, Providence, R. I.

treasure house for pedagogical history in Worcester, Mass., one as late as 1771 from London.<sup>219</sup>

In spite of her ardent admirers even here at the very dawn of the upheaval that was to usher in the nineteenth century this English beauty is still shrinking and trembling in the side scenes. Lowth apologizes for writing an English grammar, but he plucks up courage when he thinks that "English hath been considerably polished and refined, its bounds have been greatly enlarged" during the past two centuries so that it deserves some treatment in book form. He is very simple, free from philological cob-webs and theories, without elaborated reflections and intricate tables, having none of the sixty odd rules into which grammar later effloresced. His specimens of parsing at the end differ only slightly from similar exercises of twenty years ago, omitting questions and leaving out reasons. All in all not a bad guide along this new path.

#### LITTLE ATTENTION IN AMERICA.

But even the largest of these grammars was only a short intellectual meal and it is not certain that many schools had even this morsel. Just before the Revolution Lovell's Latin school in Boston, Mass., provided for English composition in the translation of Cæsar's Commentaries.<sup>220</sup> This same witness testifies that he had learned some grammar in Dilworth's spelling book, but that generally in the secondary schools there was no formal teaching of this subject. Later when he went to college he was put into Lowth.

Mason, who has left reminiscences of Yale, though in the period after the Revolution, says almost no pains were taken with English in the college at that time. He himself was quite deficient along with others in this branch, but still he

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<sup>219</sup> 12mo, 160 pages.

<sup>220</sup> *Common School Journal*, Boston, Mass., Vol. 12, page 311, Oct. 15, 1850.

past through college with good success, being among the first of his class.<sup>221</sup>

Noah Webster, in 1840, glancing back over his earlier days, could find no traces of English grammar in the schools before the Revolution.<sup>222</sup>

Still from the earliest beginnings some clear thinkers realized the educational value of English. It was studied to some extent in the Hopkins Grammar School of New Haven more than a decade before 1700, because it was then that a committee of the trustees reported that only those boys were to be admitted for learning English books who could spell and had begun to read. Then they were prepared to "perfect their right spelling and reading."<sup>223</sup> Down in Virginia was the same solicitude manifested. Professor Hugh Jones, mathematics, in William and Mary, in the first quarter of the eighteenth century, followed in the steps of Montaigne and Milton in providing the best training for gentlemen. He prepared short treatises, one of them "a short English Grammar." Unfortunately so far as can be learned no copy of this is in America, though the British Museum catalogues one.

As one of the first in America, and perhaps the rarest now, some bibliographical details, enough to show the spirit of the work would hardly be amiss here, especially when the settlement of the locality in which the work was composed is being celebrated so fully. Reliance has to be put on the great English library in London, which is the only possessor of a copy in existence so far as this investigation has gone. Most trusted hands have transmitted the following description<sup>224</sup> of the one in the British Museum, in addition to the

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<sup>221</sup> Mason, page 11.

<sup>222</sup> Barnard's *Journal*, Vol. 26, page 195.

<sup>223</sup> Barnard's *American Journal of Education*, Vol. 4, page 710.

<sup>224</sup> The great authorities on European Americana, B. F. Stevens & Brown, 4 Trafalgar Square, London.

title which runs thus in the catalogue, "An Accidence to the English Tongue"—

Contents of the Division and Use of English	
Grammar .....	page 1
Of the Characters and Sounds of English Letters .....	" 2
Of the Correction of our Alphabet .....	" 3
Of the Organs of Speech and Formation and Use of Great and Small Letters .....	" 6
Observations upon the Vowels and Consonants . . .ib	
Of the Tangs, Brogues and English Tones and Dialects .....	" 11
Of the Methods of Learning the True Sound of English Syllables and Spelling .....	" 13

Page 13 treats of—

- "The Northern Dialect, which we call Yorkshire
- "The Southern, or Sussex Speech
- "The Eastern, or Suffolk Speech
- "The Western or British Language
- "The Proper, or London Language."

The book consists of 86 pages in all, made up thus: Half-title, two pages, unnumbered; title, two pages, unnumbered; Dedication (to Her Royal Highness Wilhelmina Charlotte, Princess of Wales, dated at end April 22, 1724), paged III-V; Contents, VI-IX; page X unnumbered and blank; Text, pages 1 to 69; pages 70-72, numbered, contain list of books printed for John Clarke. This is followed by a blank leaf unnumbered,—the signatures are A to G, 6 in sixes, with a blank leaf at end in addition. The title page describes Hugh Jones as "lately mathematical Professor at the College of William and Mary at Williamsburg in Virginia, and Chaplain to the Honorable the Assembly of that Colony." It was "printed for John Clarke at the Bible, under the Royal Exchange." It has woodcut initial letters at chapter

openings, with woodcut ornaments at head or tail pieces at chapter divisions. The British Museum copy is in an old red morocco binding (contemporaneous) gilt tooled border, with central gilt ornaments.

It differs considerably in philological flavor from "Young Man's Best Friend," which was a general catch-all of all the branches of education and learning from the alphabet to rules of health for both young men and young women. Although in the middle of the seventeenth century, he had to pay his devotions at the altar of Latin. In the midst of legal and business forms and recipes of all sorts he sandwiches ancient mythology.

A more ambitious aspiration than all of these comes to light in the manuscript materials of Harvard University, just four years after the close of the seventeenth century. The authorities ordered the establishment of "a professor of philology."<sup>225</sup> This advanced idea doubtless never got beyond paper as the massive two volumes by one of Harvard's presidents give no treatment of the instance.

Indirectly though, especially in Harvard, some of the best English teaching was carried on in a practical way. As the dominion of Latin was gradually narrowed, declamations, and orations were publicly made in the mother tongue. There were also dialogues with careful translations from Latin sources. The college authorities yearned for "graceful elocution" before a body of hearers and the trustees would appoint committees for the purpose of passing upon these exhibitions. After ten years of such insistence it was required that there should be two such entertainments yearly, covering dialogues, forensic disputations and all other exercises that would stand as specimens of the student's proficiency.<sup>226</sup>

Of the history of English literature, of its master pieces,

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<sup>225</sup> Harvard College Papers, Vol. 1, No. 36.

<sup>226</sup> Quincy, *History of Harvard*, Vol. 2, page 124.



such as Shakespeare and Milton, there is no hint. There is almost as little odor of compositions. ~~X~~The memorizing of rules of grammar, lifeless parsing, with a mere breath of linguistics proper and phonology, about contained the sum total of requirement in formal English. But the constant swapping of Latin and English expressions was in itself a most excellent discipline in the native speech. And when we add the set addresses, either in argument or from the pulpit or platform, we have the rudiments for substantially all improvement in daily speech. It was in these translations and in the minute pondering of the massive eloquence of the ancients that the orators of the first period of American history got their strength and vigor, their deep grasp upon the foundations of human influence.

#### FRENCH.

For school purposes the foreign modern languages hardly existed up to a century ago. If a man's own linguistic medium was beneath his notice in the class room, still more so was the speech of those with whom he was either at war or at enmity for generations past. The merchant, the traveller or the servant who wished to accompany his master across the boundary, might tolerate these barbarous jargons just as he might put up with strange cooking and outlandish customs, all for his own benefit, but that there might be anything in them for his own improvement and inward development, why only the most enlightened among them had reached that upper level of appreciation and culture. Still there might be a few curious souls, or what is much more probable, a few practical persons, who might either wish to wander abroad or to follow up an investigation in another dialect, and for these the study of French was permitted at the English universities as far back as the thirteenth century. John Locke pleaded for French and John Webster derided the attainment of these other languages as useless labor.

His discriminating eye could see nothing in the procees except the possession of a dozen symbols for one idea. The whole thing to him was an intricate labyrinth wherein a boy "is continually roylng like a horse in a mill and yet makes no great progress."<sup>227</sup> But truly, if a man wanted to get the marrow of one of these other literatures or if he wanted to provide himself with another set of words for trade, why then it would be well to learn something of French. The grammatical method though was a "guilty path of confusion and perplexity."

Like a spark on a bare plain of darkness is the experiment with a French tutor at Harvard in 1735, Langloissorie, who held a very subordinate post there to give training in this Latin off-shoot. But to the Puritan he was a Frenchman and therefore dangerous to piety and morality. He was charged with heretical performance in his classes and there was much disturbance of heart among the faithful pedagogues lest his unorthodox pronouncements had found lodgment in the immature minds. He was investigated, cleared of the charge, but it was felt safest that he be removed.

About a decade previous, Hollis, who was such a warm friend of colonial education, had gagged at the idea of French books in the college library although he thought that such ought to be "esteemed in a public library" as so many "very valuable books in history and philosophy are written in French."<sup>228</sup> An old student of Harvard, recalling his years there, records that French was allowed as an extra at Harvard, fees being charged on the quarterly bills as books were.<sup>229</sup> It is farther southward, where the colleges were of slower growth for various reasons, in Virginia, that we are to place the honor of founding the first chair of modern

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<sup>227</sup> Webster, *Examen Academicarum*, page 21.

<sup>228</sup> His letter, Harvard Archives, Hollis papers and letters, page 58, 1718-74.

<sup>229</sup> J. L. Sibley, letter to S. A. Eliot, Dec. 21, 1849.

languages in America. Not much data is available, really, this fact is nearly all that we have, except the additional one of the name of the first occupant, Charles Bellini, of Italian extraction, who came over two years before the outbreak with England, at the very end of the period intended for this investigation.<sup>230</sup> Some ten or twelve years later there issued from the press in Boston a French grammar by John Mary, an instructor at Harvard.<sup>231</sup> It is almost like looking at the portraits of the ancestors to the third or fourth generation of persons to-day and pointing out the great resemblance that has been handed down through these successive steps. Not so exact in details and not so amplified in illustrations as French school grammars to-day, but in the body of principles and in the general treatment substantially the same.

As compared with what is done in this tongue in our schools to-day and as compared with what was done in Latin in medieval days, the course in French almost vanishes to a speck, so little was there done in it.

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<sup>230</sup> *William and Mary Quarterly*, Jan., 1898, page 181.

<sup>231</sup> 1784, 141 pages.

## CHAPTER VI.

### MATHEMATICS.

As with a child so with a race, the mental qualities of memory and imitativeness are the first to be developed. Speech, words and phrases are the earliest acquisitions of the individual and of the entire group of human beings. Latin absorbed all energies, filled all moments, supplied all intellectual food. Science of numbers, except in the rudiments, was of very slow development. For practical purposes the digits had to be evolved, counting was a necessity. Next to these were the demands of religion for keeping track of the great ecclesiastical epochs. For centuries the chief incentive for studying mathematics was the desire to calculate the time of Easter and the festival days.

The two great school authorities of the middle ages, Cassiodorus and Capella, had but little more of mathematics than a few definitions mingled with superstitious absurdities about virtues of certain numbers and figures, Cassiodorus occupying only a few pages.<sup>232</sup> The universities of the time had only a mere smattering of the subject. Oxford up to 1300 covered only a little of Euclid. The Italian humanists regarded a man who knew Euclid as a prodigy of the intellect. The universities in that peninsula in some cases had geometry as an extra, for which special fees were charged. Roger Bacon, who spanned a large portion of the thirteenth century, complained that very few went beyond the fifth proposition of the first book of Euclid. For long periods after him the six books were considered a stupendous mountain for one to climb. But there was progress, slow, and painful, and almost wholly along the lines for usefulness in daily life. By 1750 Edinburgh Uni-

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<sup>232</sup> Hallam, *Literature of Europe*, Chap. 1, Paris edition, 1837.

versity offered trigonometry, logarithms, surveying, fortifications, dialling, conic-sections, theory of gunnery, with astronomy and some allied physical branches.

## ARITHMETIC.

The eldest of the mathematical family, because the most practical, a trait of character imparted to it by the Egyptians, is arithmetic. The second most distinguishing feature of it was its fondness for formal rules and its contempt for reason, as it was ordinarily presented in the schools for a long time.

Its early range was very limited, scarcely extending farther than nursery puzzles of the present day. Alcuin, the great educator for Charles the Great, contains problems designed to excite the curiosity and to whet the wits and to furnish amusement for the boys of his day. How, he asks, can you kill three hundred pigs on three days, killing an odd number each time? After allowing his hearers to sharpen their teeth on this nut for a time, he naively informs them that it cannot be done. Many of his other examples are like that one, familiar to all small children among us, such as two geese before two geese, two geese behind two geese, and two geese between two geese, how many are there in all?

But for our colonial ancestry, an indefatigable investigator ranks the Hornbook as our earliest arithmetical primer since it had Roman numerals.<sup>233</sup> To go beyond this, generally, each child had to make his own manuscript book from the dictation of the teacher as printed books were a great rarity among us up to the eighteenth century. Trade and the counting room set the pace. Arithmetic was only a means of getting along in the world, of bartering and dealing with your fellowmen, of making money, but it was without educational value. In the arrangement of subjects for the common schools the words usually ran "writing and arith-

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<sup>233</sup> F. Cajori, *Teach. and Hist. of Mathematics*, page 11.

metic." The great light among arithmetical authors, Cocker, wrote more books on calligraphy than on numbers.

The facilities were very scanty, no blackboards, no slates; instead cheap paper, often only the margins, blank leaves of day books, backs of letters, even birch bark, with ink made from the maple tree and copperas, were forced into duty. A little mastery of figures was sufficient for the pedagogue. If he could enumerate the minutes in a year or the inches in a mile he was competent to instruct in this branch. He was hardly expected to tackle anything but integral numbers, but if he could handle fractions and make excursions into the rule of three he was a marvel. Only admitted geniuses got beyond these. Often in the boys' school the whole thing was shunted off to the evening, while spelling, reading, and writing proudly occupied the day. The method was simple and it has not died out yet. It is still to be found on the frontiers and it was common three or four decades ago in those sections that were educationally backward. The teacher curtly gave out "sums" and each pupil strained his very vitals to solve them. If he got the correct answer, which his master decided by looking at a "key," he was given another or pased on to some other subject. We can almost hear now the childish voices piping around the teacher's desk, six, eight, ten, or fifteen of them as the boys group around calling out the answer that each had found. An eagerness, a feverishness with each to get his work passed upon, the whole mass of voices punctured and streaked at times with a querulous complaint of the unlucky stupid ones that they could not see through the matter at all. They were even more insistent than their fellows for fear they might be sent back to their seats forbidden again to seek the shade of the trees outside, in summer, or the sunny side of the rough cabin in winter, to go over the painful path again. It was in fact almost a passion in some schools. Nearly every other branch was excluded. "To understand

figures well, we reckoned the height of learning," so runs the testimony of a Virginia preacher only a score or so of years before the Revolution.<sup>234</sup>

If it was such a mighty strain for the boys it was only natural that the girls were saved from such efforts. The road was too rocky, the heights too inaccessible for feminine feet and hence while the boys were taught reading, writing and arithmetic the girls had reading, writing and sewing. To the colonial men it was much easier to thread a needle and to sew a seam than to "do sums"—and also required far less mental ability. There were few women teachers in those days, but what there were were gallantly excused from imparting arithmetic. The average colonial would as soon have expected a woman "to teach the Arabic language as the numerical science."<sup>235</sup>

#### CHIEF TEXT-BOOKS.

We can learn the subjects in these early schools, we can get the reminiscences of some of the students in their after life, often in old age, we can draw upon our imaginations to revive scenes for us, but there was no phonograph in those days, nor was there the realistic newspaper reporter sitting in a corner to jot down what occurred. A text-book is not the ideal mirror for reflecting the actual education. Even now the difference between the book and the instruction in the class rooms is often a mighty gorge. But in the absence of the other infallible data, which we can never get, the text-book is one of our safest guides in reviewing the past.

Happily there were not many of these and specimens of each still survive. Only six of those in common use in elementary schools did those earnest pioneers, Cajori and

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<sup>234</sup> D. Jarratt, page 24, of his life.

<sup>235</sup> W. Burton, page 152, *District Schools*.

Wickersham find. They are worthy of rather full picture of their title pages with some other facts as follows:

- 1 A primer or spelling book containing "Roman numerals, lessons in the fundamental rules of arithmetic and weights and measures, a perpetual almanac" (Wickersham, 194) by George Fox, founder of Society of Friends, published in 1674 in England, republished at Philadelphia, 1701, at Boston, 1743, and Newport, 1769: Not much used outside of Friends. (In Pennsylvania Historical Society).
- 2 "The American Instructor, or Young man's Best Companion, containing spelling, reading, writing, arithmetic, in an easier way than any yet published and how to qualify any person for business without the help of a master," by George Fisher, printed in Philadelphia, 1748, by Franklin and Hall, also had bookkeeping: rules for mechanical calculations, gauging, dialling, and many recipes and directions for various things.
- 3 James Hodder—"Hodder's arithmetick, or that necessary art made most easy," in London, 1661, American edition from 25th English in Boston, 1719.
- 4 *Coffer Konst*, by Pieter Venema, Dutch Teacher who died about 1612. English translation in New York in 1730—apparently second oldest arithmetic printed in America.



- 5 Cocker's Arithmetic, really published by John Hawkins, and hence may be under his name: after death of Cocker, in 1667 in England, American edition in 1799 in Philadelphia.
- 6 Thomas Dilworth—Schoolmaster's Assistant—first in London 1744 or 1745, reprinted in Philadelphia in 1769; then others.

It will help us to get acquainted with these by knowing some of their predecessors. One of the most prominent was Record's "Arithmetic or the crown of arts."<sup>286</sup> It is a very distressing book to look into as it is in that old style black letter, all of it in question and answer. He is tainted with the prevailing commercial conception of the subject, devoting ten pages to expounding "profit of arithmetic" in the form of a dialogue between the master and the pupil, in which the latter, poor wretch, gets decidedly the worst of it when he is unable to follow the ponderous reasoning of the pedagogue. Like a medievalist he dotes on tables and forms, covering his pages with such complications, preceding some of them with the proud announcement "lo! this is the table." He had the honor of being edited too as before the end of the century, Edward Hatton, "philomercat," based his work on Record, assuring us that it is an improvement, with a new method, and better tables. Both have Latin sprinkled along the way.

Though not first in the above list, Cocker belongs in that grade chronologically. His first edition, in 1677, appeared after his death, and is considered by some to have been a forgery, but perhaps based upon a manuscript left by Cocker. To him belongs the high distinction of excluding

<sup>286</sup> London, 1654, 18mo, 629 pages, copy in the R. I. Hist. Society.

all demonstrations and reasonings while confining himself to commercial questions only. He relied entirely upon rules without giving any reason or basis for them so that it became almost a proverb to settle questions by saying "according to Cocker," a maxim that almost operated as a curse to real learning. It was the great archetype for the brood of arithmetics that followed. It went itself as high as fifty editions before the middle of the eighteenth century. A Philadelphia worshiper even called in poetry to represent his devotion. In the edition of that city in 1779 there is a rude portrait of Cocker and these lines :

"Ingenious Cocker, now to Rest thou'rt gone  
"No art can show thee fully but thine own ;  
"Thy rare Arithmetick alone can show  
"Th' vast Thanks we for thy labours owe."

In the spirit of these descriptions we find his chief contribution to education. He was thorough and through a practical man, covering the usual subjects in the arithmetic of the times, the four fundamental divisions, fractions, rule of three, etc.

Of George Fox's *Primer* and of Venema's *Coffer Konst* there is not much to be said as both were of limited use, the first, as already noted, chiefly by the Quakers, and the second, as might be inferred from the name, almost wholly by the Dutch element in New York. Very few copies of either are known to be in existence, the largest book repository in the United States and one of the largest in the world, the Congressional Library in Washington, being unable to offer either.

The young men of his day must have been very dull, or at least George Fisher must have thought them so when he got out his "Young Man's Best Companion," about the middle of the eighteenth century. In places he omitted rules, but he gave the entire operation with all the painful particu-

larity of a Japanese teacher of the solemn tea ceremonial, with no more reasoning than a phonograph would grind out. He had promised to make the thing easy and intelligent to the meanest capacity and he largely kept his word. That jagged mountain of difficulty, the rule of three, he very suavely gilded as the "golden rule." As indicated above, he attempted to be encyclopedic for virtually all kinds of practical knowledge, meeting with a success in this road travelled by so many in his day.<sup>237</sup>

The remaining two, Hodder and Dilworth, of the above half dozen, are here placed last, not because of their later appearance in literature, but because of their wider use in the colonies. Hodder must originally have been frightfully full of mistakes, as William Hume, who got out a twenty-seventh edition of him in London, 1739, boasts that Hodder has been "augmented and above a thousand faults amended." Even with all of these improvements the book is very defective from the standpoint of logic and reason. There is one good feature. The tedious dialogue method had been dropped.<sup>238</sup>

#### THE MOST POPULAR ARITHMETIC.

But Dilworth was the most popular of all these mathematical efforts in colonial days after he once entered the field. Perhaps his great success is due to the happy union of both the practical and the theoretical as was claimed on the title pages of some of his editions, but he was not planning to please those who like to "sweat at their business."<sup>239</sup> Even at that time he apologizes for getting out a printed book, so strongly entrenched was the habit of each pupil making a manuscript arithmetic, but he was a prophet to recognize that type was far more likely to please the pupil

<sup>237</sup> There is a copy in the Congressional Library.

<sup>238</sup> There is a copy in the Boston Public Library, 12mo, 204 pages.

<sup>239</sup> Edition of 1767, 12mo, pages 192, in Congressional Library, his *New Guide to the English Tongue*.

and assist the teacher than any other device. He also sought to tempt the palate by a collection of "pleasant and diverting questions," two of which have come down orally to the present and can be traced back in the past for nearly a thousand years. A couple of them will not be amiss here as illustrating the standard at that time, running substantially thus:

A farmer with a fox, a goose and a peck of corn has to cross a river in a boat so small that he can take only one of these three burdens with him at a time. How can he so handle matters that nothing will be destroyed, because he cannot leave the fox and the goose together nor can he leave the goose and the corn.

Again, the principle of this problem is retained under the form of three jealous husbands each with his wife, meeting the same conditions on the river bank. How are they to cross so that none of the wives is left in company of one or two men unless her husband is also present?

There is a third modification of this general puzzle in which three sorts of wine and three vessels figure.

Another example is a little more mathematical: "Let twelve be set down in four figures and each figure be the same."

Like a successful teacher, after having once aroused the interest of his readers by these alluring bits, Dilworth goes ahead producing a book not so different in aim and in content from arithmetic to-day but radically otherwise as regards reasoning and the use of the dialogue. In fact he is the closest adherent of the Cocker school, disdaining all analysis and explanation of every kind, but depending upon a veritable thicket of formal rules.

#### SOME MINOR TITLES.

On the shelves of New England libraries there are other arithmetics not different appreciably from those already de-

scribed. It is impossible to say that they were ever used in colonial schools, but there is fairly solid ground for believing that they were. Some of them are dated later than this study covers, but as they were of advanced editions, some of the earlier issues might have been available for colonial schools. A brief reference to some of them will not be useless, if for no other purpose than to indicate that the colonial teacher had the same itch for changing text-books that his successors down to the present have always suffered from.

A short list is here appended:

Robert Hartwell, "philomathematicus," got out a seventh edition of *Blundevil*, a large book of 800 pages, of which arithmetic formed only a small part.<sup>240</sup>

"Wingate's Remains or the Clerk's Tutor to Arithmetic and Writing, being a miscellany arithmetical and mathematical," admitting that he leans very heavily on Cocker.<sup>241</sup>

There is one also by John Hill, containing logarithms and other subjects not at all ranked as arithmetic with us.<sup>242</sup>

The title of William Gordon's "Universal Accountant" indicates very clearly the general drift of his volume, to be practical.<sup>243</sup>

Even Ireland was drawn upon, as there is Elias Voster's arithmetic. It is rather hard to account for its presence in New England after he announces on the title page that it was "chiefly adapted to the trade of Ireland," though of course a wandering son of Erin may have brought it along in his baggage.<sup>244</sup>

Daniel Fenning was almost a thesaurus in himself as his

<sup>240</sup> In Boston Public Library;—London, 1636, 8vo, square.

<sup>241</sup> In American Antiquarian Society; London, 1676, 12mo., pages 207.

<sup>242</sup> In American Antiquarian Society; London, 1761, 8vo., pages 382.

<sup>243</sup> In American Antiquarian Soc.; 4th edition, 1777, Edinburgh, 2 volumes.

<sup>244</sup> In Rhode Island Hist. Soc.; 20th edition, 1793, Dublin.

“British Youth’s Instructor” has everything practically that concerns knowledge in general in a verbal contest between “Philo” and “Tyro.” There must have been some Tories who adopted this for use as this edition came out after the Revolutionary War.<sup>245</sup>

#### TWO AMERICAN ARITHMETICS.

It was a long time before the American educators and mathematicians undertook to prepare a book of arithmetic. Here as in so many of the other lines of intellectual pursuit Harvard blazed the path. After many claims and counter claims it is now settled that to Professor Isaac Greenwood is this honor due for his arithmetic of 1729, when he was still on the staff of the oldest American University. It is not known that his book was even adopted in Harvard or in any other school. As the first of Americans to light the torch he should have credit, but that is all. He did not advance the cause, he followed in the beaten path of the others, covering the usual ground in the usual way, of dead rules without reasoning. It is not known that more than three copies have survived the ravages of time.<sup>246</sup> For a time Nicholas Pike was urged as a competitor of Greenwood for the distinction of breaking the sod for Americans, but he was finally disposed of in favor of Greenwood. There are copies of his in existence, at least two being known.<sup>247</sup> He covers the usual scope for arithmetic, but adds a great deal else not included under the term at the present day, such as bookkeeping, calculations on the calendar, physics, geometry, trigonometry, surveying, measurements of all sorts, algebra and conic-sections.

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<sup>245</sup> In Rhode Island Hist. Soc.; 11th edition, 1787, 12mo, 302 pages.

<sup>246</sup> F. Cajori, *Teach. Hist. of Math.*, page 14, one of these three copies is in the Congressional Library.

<sup>247</sup> Both, of 1788, 512 pages; one in Congressional Library, and one in American Antiquarian Soc.

## THE COLLEGE COURSE.

Much of the arithmetic already described and many of the books just noted were used in the colleges of the times. Difficult it is now to draw the line between the preparatory institutions and the colleges, but far more troublesome a task to mark the limits of each in that period so dim, and so scanty of material. But there is certainty to this extent, that arithmetic was one of the regular college studies and for a time was the only mathematical branch, excluding astronomy and geometry. The first official glimpse afforded us of the college curriculum in America<sup>248</sup> has arithmetic, geometry, and astronomy in the last year, with no other mathematics, and the next hundred years bring virtually no change. Indeed, arithmetic survives much later. There is record of it in the senior year in 1725, it is also listed in the same place the following year.<sup>249</sup> Still more, down to the Revolutionary era, both in Harvard and Yale both student and teacher mention arithmetic in the college, even being first begun there.<sup>250</sup>

## EARLY MATHEMATICAL CHAIRS.

It was a painful strain to rise from these rudiments, and the effort could be made only after there had been enough growth to allow a division of labor. One of the earliest symptoms is connected with a benefactor of Harvard, Thomas Brattle, who left two hundred pounds from his estate in 1713 for "the maintenance of some master of arts \* \* \* one best skilled in the mathematics." This auspicious start was followed by one of the best friends of

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<sup>248</sup> Harvard, 1643.

<sup>249</sup> Wadsworth's manuscript diary, Harvard Archives, page 18; Quincy, *History of Harvard*, Vol. 1, page 441, much being based on Wadsworth.

<sup>250</sup> *American Journal of Ed.*, Vol. 32, page 873, by Josiah Quincy; Stiles's *Diary*, Vol. 3, page 312.

the institution some ten years later, Thomas Hollis, in his bestowal of a fund for a professorship of mathematics. The holder was "to be a master of arts \* \* \* well acquainted with the several parts of the mathematics and of natural and experimental philosophy; \* \* \* to instruct the students in a system of natural philosophy and a course of experimental in which to be comprehended pneumatics, hydrostatics, mechanics, statics, optics, and in the elements of geometry, together with the doctrine of proportions, the principles of algebra, conic-sections, plane and spherical trigonometry, with the general principles of mensuration, planes and solids, in the principles of astronomy and geography, viz, the doctrine of the sphere, the use of the globes, the motions of the heavenly bodies according to the different hypotheses of Ptolemy, Tycho Brahe and Copernicus, with the general principles of dialling the divisions of the world into its various kingdoms, with the use of the maps, etc." In addition he was to give public lectures, and to finish all of these sciences in two years. Brattle was very thoughtful in excusing such a mathematician and scientist from assuming the pastoral office in any church and he also graciously permitted him to be free from other college duties than the ones marked out above.<sup>251</sup> The first occupant was Isaac Greenwood, who, as has been stated, signalized his position by getting out the first arithmetic. But mathematics formed only a small part of the post. It was really more science than mathematics. Greenwood was most likely far more attached to physics than anything else. Some six or seven years after being installed he requested the privilege of taking some of the apparatus to his home for the vacation, almost all being in the field of physics, such as mirrors, cameras, telescopes and quadrants, with the orreries and spheres.

While to Harvard is yielded the palm for priority of be-

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<sup>251</sup> Harvard Archives, January, 1726.



ginning, to William and Mary belongs the primacy of establishment of a professorship of mathematics, preceding her New England sister by a year or so. The first incumbent, Hugh Jones, was also an author, but of wider range than his northern brother as he not only wrote mathematics but English grammar, history and theology.

Science may have proved too much for Greenwood's religious principles, first undermining those fundamental truths and then weakening his moral foundations. He became intemperate and finally had to be removed. Hollis, the founder of the chair, had been very skeptical about Greenwood after having seen him on a trip to London purchase half a dozen pairs of silk stockings. He gravely wrote that it was doubtful whether a man of such luxuriant taste was fit for the severe life of a scientist.

Nathan Prince followed him for a short time, but was in turn superseded by John Winthrop, who served forty years to 1779, but both of them were more interested in science proper than in mathematics. During his long term, Winthrop made considerable use of Ward as a text-book, which will be described a few pages further on. He also used Gravesande in science and Euclid in geometry. Astronomy was in his care, in which he was much interested, winning a reputation in it and going as far as Newfoundland at one time to make some observations. Generally here as in the other institutions, mathematics was a handmaid to the other subjects. But slight encouragement was given to pure mathematics, which was left as material for idle dreamers to speculate upon.

#### AT YALE, WILLIAM AND MARY, AND PENNSYLVANIA.

Elsewhere the general standard scarcely rose to the level of Harvard. At the beginning Yale was even behind, as late as the first quarter of the eighteenth century having scarcely more than a little arithmetic with some survey-

ing.<sup>252</sup> Gradually Euclid was added and there is some evidence that algebra was taught for a time at least before 1750. It is not safe to place Harvard as early as this in this branch if we have to demand written evidence. Beyond the end of the period designed for this investigation, we learn of arithmetic, algebra, geometry, trigonometry, conic-sections, and fluxions being in the course, but undoubtedly a part of these were electives. Ward was the author of the most of the books in all these branches.

About the middle of the eighteenth century a new head of Pennsylvania University flamed out in a very full course in mathematics, practically the same as we have seen at Yale much later, but whether they were all actually studied is a matter of inference largely.

As has been said, William and Mary out ran all others in providing for a regular instructor in mathematics, Hugh Jones, in 1724. It is the belief of the most thorough-going student of the matter that William and Mary at that time was fully abreast of Yale and Harvard in this subject.<sup>253</sup>

#### THE NET RESULTS IN COLLEGE.

These subjects were numerous certainly for the needs then and very largely for the discipline now, but they were in a different atmosphere from ours. There was but little aim to use them as means for mental development. The entire spirit was utilitarian. With arithmetic as the bed rock designed to fit men for the daily affairs of life, there were usually some six books of Euclid to lay the foundation for that other highly practical study, surveying. Necessarily practice with the rod and chain called for trigonometry. The more theoretical branches, such as algebra, conic-sections and fluxions, came very late in the period under investigation. It can be readily surmised that they received

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<sup>252</sup> F. Cajori, *Teaching and History of Mathematics*, page 28.

<sup>253</sup> F. Cajori, *Teaching and History of Mathematics*, page 33.

only cold glances upon their introduction into the college, because warmth of welcome was extended to those branches that would aid men in making a living. These were the ones favored with donation in the shape of instruments and books. It was a complete set of surveying instruments that Joseph Thompson donated to Yale about 1730. It was surveying that Jefferson studied at William and Mary to his advantage, and it was in this subject that Washington received his commission from this college, the only academic connection he ever had with any institution. It was in the allied subjects of navigation, dialling, and fortifications that Pennsylvania University blossomed so abundantly under President Smith.

#### SOME OF THE TEXT-BOOKS USED.

How far advance was made along each of these paths is a matter of conjecture very largely, especially for the latter part of the journey. There are, it is true, manuscript text-books in that indispensable repository in Worcester, Mass., and elsewhere, but whether they represent the limit then no one can assert positively, still less are they a fair index for what was done after the printed books came into such general use.

Nevertheless they are of considerable help in forming our opinions. There is one by Nathaniel Bowditch, after the Revolutionary War, almost a quarto of 324 pages, covering algebra, plane and solid geometry, trigonometry, conic-sections, infinites and logarithms, with arithmetic at the end.<sup>264</sup> It is nearly all by positive directions and rules, emphasized with question and answer. In algebra he went into quadratics, extraction of roots, and evolution, but a large part is devoted to miscellaneous questions. His conics are very elementary, while his arithmetic is nearly all interest and his

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<sup>264</sup> Dated August 23, 1788, beginning algebra on the first of August, 1787, as he states: in Boston Public Library.

geometry may be about one-half of what we have to-day. The most marked feature is the number of problems with their detailed solutions.

But one of the most widely used is John Ward's *Young Mathematicians' Guide*, which ran up to at least a dozen editions with a total of some 500 pages. It was a little encyclopedia, for its day, of mathematics, as it had arithmetic, algebra, geometry, conic-sections infinites, gauging and logarithms. All of these being in such small compass none was expanded very much. He was meagre in all of them. His arithmetic dispenses with reasoning but relies upon rules, the universal crutch at that time. His algebra was without factoring, and his notions of it were rather crude. Such as he was he was the prevailing favorite for practically three-quarters of a century at Harvard, Yale, Brown, Dartmouth and Pennsylvania.

Many others that have lived to the present are Samuel Cunn, Edmond Stone, Isaac Barrow, all three still on the shelves in Worcester. There are two others older and more dignified than these, Gravesande and Alsted. The latter furnished a geometry in use both at Yale and Harvard, but not specially different from those already mentioned. Gravesande followed the custom of the day in ranging over great stretches of knowledge, including physics and metaphysics and logic. These last furnish a speculative tinge to his efforts and at one place he gives us a mathematical demonstration of the care that Providence takes to protect the affairs of earth by the relative number of the two sexes. Outside of these religious shades his mathematics are of the prevailing type.

One of the most interesting developments preserved for us of the mathematics of the period is the collection of mathematical theses at Harvard University. The most of them are large and elaborate, showing the minutest pains, evidently designed for exhibition purposes. They also indi-

cate the bent of the teaching as the topics are drawn largely from surveying and measuring. The astronomical ones are very ornate, some of them having very creditable maps of the world. There are questions in algebra, but largely elementary, though they are worked out with a vast display of tabulation and beautiful lettering. For instance, there are twenty-one steps covering a folio sheet for solving the following: "Three gentlemen, Tom, Dick and Harry, have each so many guineas that if Tom's and Dick's be added to half of Harry's that number will equal 92; that if Dick's and Harry's be added to one-third of Tom's that number will equal 92, and if Harry's and Tom's be added to one-fourth of Dick's that number will equal 92; question, how many guineas have each gentleman?"

#### ALGEBRA.

This example occurs in the Revolutionary era. As has been said, algebra was of rather slight development in our colonial days, but it has a distinction pretty much its own among the mathematical branches, it was the first cultivated for its own sake without the ulterior intent of harnessing it immediately for daily work.

Delightful it is to historians and philosophers to follow a thread back to its beginning. Often this can be done only by leaping over breaks or very carefully crawling over precipitous canyons where the line is worn almost through, finally reaching a part where the original material is changed into almost another element. But by such skillful gymnastics algebra has been discovered as among the ancient Egyptians in its germs at least, though the form was so different that only by working up through the different stages could the embryo be recognized as the original seed. But we do come across something that we can consider as containing the idea of this branch. There is found in the distant ages

this example, "heap, its seventh, its whole makes 19," or

x

transposed to modern notions, " $-$  plus  $x=19$ ." But it is

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sharp insight to see all this and to discover algebra in the middle ages as it is only in the seventeenth century that we really find anything such as we now unite in calling algebra.<sup>255</sup>

As always, this plunge into the unknown excited men's imagination. To the first explorers it was something huge and incomprehensible. To John Ward it was "that mysterious science."<sup>256</sup> With such a tincture of mysticism and metaphysics a hodge-podge of arithmetical geometry and other mathematics was a very direct consequence. He still had not divorced himself from the practical view of mathematics as he had a great deal on interest computations. Neither had he got over the sin of formal rules, as his volume is built on those entirely. Three-quarters of a century later to John Gough algebra was the "great art," "a method of managing arithmetical and geometrical computations by letters."<sup>257</sup> There is another author to be found in the list of colonial text-books, Hammond, filled mostly with the detailed solution of problems.<sup>258</sup>

How much was studied in our colleges in those early days cannot be accurately determined now, but on this we can rely pretty confidently that not much ground was covered. There is data that Yale had something of it, not more than the rudiments, as early as 1742. There is not positive mention of it at Harvard so far as known earlier than 1786, though we must infer that it was offered in the classes many

<sup>255</sup> D. E. Smith, *Teaching of Mathematics*, 1906, pages 68, 145.

<sup>256</sup> *A Compendium of Algebra*, London, 1724, 220 pages.

<sup>257</sup> Edition of 1798, with appendix by W. Atkinson, on algebra entirely containing binominal theorem but mostly dealing with problems.

<sup>258</sup> 1742 edition, 8vo, pages 328.

years before that time. There had been a development along other mathematical branches, and besides it is not at all likely that the two institutions so close to each other would have been so far apart in the order of introducing this new branch. It is possible that it was also in use in the other colonial colleges.

#### ASTRONOMY.

Far more than algebra was astronomy a land of magic and mystery to the masses of our colonial ancestors and still more so to their medieval forefathers. Those boundless spaces above and around were the haunts for ignorance, superstition, credulity. Here the imagination had full play for its wildest absurdities and most intricate perplexities. From these vast unsounded depths came the awful misfortunes that assailed the human race. The invisible powers working there sent forth their dread portents and wrought all the terrible disasters in the shape of drought, pestilence, fevers, overwhelming storms, fiery darts and calamities of all sorts that could neither be understood nor controlled. Eclipses, auroras, comets, and all other unusual phenomena struck terror into the breasts of people and filled their souls with awe.

Whenever the theologians took the matter in hand and tried to expound their doctrine they only added confusion to stupidity. They could see fiery horsemen in the Heavens, they could almost feel the flash of the waving sword, and almost hear the crack of doom and the roar of flames in such an event as an aurora. Bishop Hall peopled the stars and the depths around with throngs of angels to do the bidding of the Almighty, so innumerable that only the Deity could count them. But they kept the machinery in motion, they turned the crystallized spheres, they whirled the moon around and brought about those "strange concussions of the earth" and "direful prodigies in the sky." To these

ecclesiastical warriors the stars and the whole of the blue vault above were only for man's edification and interest. He was made of an upright form so that he could toss his head back and look upon these creations and learn astronomy. But their notions of it were a medley of the Ptolemaic theory which placed the world in the center, jumbled up with the odds and ends of astrology and all kinds of speculations.<sup>259</sup>

#### MATHER ON COMETS.

In this charnel house for the supernatural and the sensational, Increase Mather was in his happiest element. He especially revelled in the study of comets. Here was something that he could let his fancy run upon without limit, as these strange bodies came out of the obscurity and soon disappeared in it again. To him they were "horrendous," and "portentous signs of evil events," but beyond the range of man's intellect to grasp, being the manifestation of God's inscrutable will. He preached a sermon on them, he wrote a book about them. His deliverances were the very acme of medieval scholarship. He raked all history, especially the ancient, and he compiled their views but of real independent thinking on his own part he was as bare as a calculating machine, except in one respect. He sneered at the astrologers who claimed to foretell the future from these striking manifestations. He also rather shrewdly concluded that they were of the same elements as the planets, both coming from "natural causes" just as earthquakes did.<sup>260</sup>

#### EDUCATIONAL USES.

But all of this baseless speculation and all of these terrifying fears eventuated very early in something practical.

<sup>259</sup> Eggleston in his *Transit of Civilization* has a brilliant description of astronomical knowledge in the Seventeenth century.

<sup>260</sup> His sermon on Comets was published in the *Philosophical Transactions*, his book appeared in Boston in 1683, reprinted in London in 1811, 8vo, page 60. Both are in the Boston Public Library.



Throughout the dark ages it was a weapon for religion to calculate the time of Easter and other church festivals. It was soon degraded from this pious purpose by designers and sharpeners to work on the simplicity of the multitude. Astrologers twisted it for their aims and pretended to cast horoscopes by a study of the twinkling points in the darkness overhead.

In time it was led to the further aid of man. Almanacs were slowly evolved. Alexander Nowell perhaps deserves the badge as the predecessor of all American astronomical writers, with his Cambridge almanac of 1666.<sup>261</sup> A Harvard man may be almost neck and neck in this race, as Urian Oakes, a Harvard graduate of 1649, got out rather early in his career a set of astronomical calculations.<sup>262</sup>

Something more educational and more scientific is a word or two to be found about the telescope owned by Governor Winthrop in 1664 and some subsequent communications to him by three Fellows at Harvard some seven years later, describing the Harvard telescopes.<sup>263</sup>

From such mists and fogbanks with only small lights of real knowledge, there could not be very helpful teaching in the schools. But it was in the colleges from the beginning. Being yoked with religion so intimately it went wherever that branch was taught. The chief text-book was that of Pierre Gassendus.<sup>264</sup> The bulk of his volumes is devoted to what we would call mathematical geography at the present day as he treats of the motions of the sun, moon, earth, planets. He also has considerable historical material on Copernicus and Tycho Brahe and Gallileo. Some of the

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<sup>261</sup> Eggleston, *Transit of Civilization*, page 6.

<sup>262</sup> Peirce, *History of Harvard*, page 44.

<sup>263</sup> *Proceedings Mass. Hist. Society*, Second series, Vol. 4, page 265, 1887.

<sup>264</sup> "*Institution astronomicae*," London, 1643. There is in the same library, Boston Public, an edition of 1682, 12mo. Both are in Latin throughout.

later editions are also embellished with figures. And some of the earlier ones are taken up in large part with an oration on the value and scope of astronomy in education.

Springing from the gloom of primitive days, entangled in the chaos of theology and metaphysics, distorted by the base hands of astrologers fettered by the bonds of ecclesiasticism, at first the mystery of science, the emergence of astronomy into the educational highway was slow and painful. It perhaps has at last reached its true rank in the lists of the college curriculum. No longer is it indispensable for graduation but at least it is offered in a scientific way in all of the stronger institutions, but required in none.

#### A THOUGHTFUL CRITIC UNNOTICED.

We can now see how thin and elementary the whole course in mathematics was, and how it was pitched in the wrong key. But it is a rare wise man among us at any time that gets the proper perspective of the present. The road behind us is so much more easily measured and mapped than the dim waving paths we are trying to tread. We now look back to those days and placidly note how the schools blundered and sprawled in the mud and blindly drifted from the road, and yet all done in loyal earnestness to the light they had. But how infinitely superior is that observer who could point out the mistakes as they were made. His voice was muffled in the choking and discordant cries about him, no heed was paid to his warnings, but after the lapse of several centuries we can hear his tones high and clear, arousing a regret that the great column of teachers had not listened and saved us from that weary straying in the wilderness. In John Webster inhered such an eye of vision. It was he that called in vain to the great mass groping helplessly here and there. They are words of condemnation too, the few transcribed here to show how keenly he looked about him.

To him the whole subject of mathematics was “slightly and superficially handled.” Arithmetic was “useless, and of no value, but transmitted over to the hands of merchants and mechanics, as though it were a liberal science, or not worthy the study and pains of an ingenuous and noble spirit.” In the teaching of geometry were the “same superficial slightness and supine negligence:” no “clear demonstration:” no “perfect practice; contenting with the sole verbal disputes of magnitude, quantity and the affections thereof,” “leaving the practice and application thereof to masons, carpenters, surveyors, and such like manual operators.” Astronomy was taught “according to the peripatetick and Ptolemaic systeme \* \* \* extolled to the heavens;” yet in all scholastic learning there was “not found any piece so rotten, ruinous, absurd and deformed: \* \* \* they take for granted \* \* \* that the earth is the center of the universe \* \* \* thence deduce the causes of gravity and levity \* \* \* grossly maintain that the heavens or orbs are as hard as steel, and as transparent as glass.”<sup>265</sup>

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<sup>265</sup> Webster's *Examen Academicarum*, page 40, etc.

## CHAPTER VII.

### SCIENCE.

For centuries the Bible had been to all the western world the very acorn of the tree of knowledge. Theology was the only true philosophy. All the ancient authorities were only the unconscious revelation of the Almighty. The classics then became a secondary source of learning. Even to the Italian humanists the most profound truths in all the departments of life were to be sought for in the ancient literatures, along with the church fathers.<sup>266</sup> Here then was the storehouse of the intellect contained in these pages of written words. Enter, gather, arrange, extract the thoughts and all ignorance can be removed. The champion systematizer, the giant analyzer, the unrivalled dialectician, furnished the method and led the way. It was to Aristotle that all thinkers and investigators turned. He forged the tools, he built the machinery. His mental ciderpress could squeeze the last drop of meaning from the raw materials of thought. Know your book, said Roger Bacon, and you know everything of the subject that the book treats of.<sup>267</sup>

It was treason to doubt Aristotle's infallibility, it was a sacrilege to find something outside of him. The story of the sun spots is well known and has already been related. It is not so much a matter of common property, the scornful question that Dr. Primrose asked of the English physician who almost revolutionized medicine by his discovery of the circulation of the blood: "Would you have us believe you know something that Aristotle did not know? Aristotle observed everything and no one should dare to come after

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<sup>266</sup> W. H. Woodward, *Vittorino*, page 196.

<sup>267</sup> Compayre's *Abelard*, page 188.

him."<sup>268</sup> Like the shadow on the Hartz mountains Aristotle towered in the heavens with his feet lost in the distant horizon, a mighty monarch of the mind to whom all were in thralldom. With the sharp-edged weapons that he had fabricated, with the arsenal of the early writers, all difficulties were to be battered down, but all under the dominion of religion. For seven centuries no composition of any renown can be found, except from the pen of a professional churchman. There was philosophy, which means a certain freedom of thought, but there could be no science, as science means free investigation. Even in their ideal schemes men hardly recognized anything outside of the languages. Hoole, a very capable teacher, whose notions of education contained something good for us even at the present day, in an elaborate plan for the training of youth, covering six years, had nothing about mathematics or science. But he ran glibly and joyously over nearly all of the lines of knowledge, depending upon past achievements of mankind, history, Latin, hieroglyphics, rhetoric, witty sentences, customs, and all those things for which men turn their faces to the rear for grasping.<sup>269</sup> The Italian revival of learning brought a little of the fag ends of science, but chiefly to enable the pupils to understand allusions to such matters in the old writers.<sup>270</sup> The University of Edinburgh climbed a little higher, but it was only by the middle of the eighteenth century. Apparently some of the elements of modern physics were offered then, but much mixed with speculation and metaphysics. They presented courses in pneumatical philosophy, treating of spiritual substances such as God, angels, souls of men. These lectures were heard by the same students

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<sup>268</sup> So quoted by Eggleston in his *Transit*, page 48, from the Aubrey preparatory memoir to the reprint of *Exercitatio*, or Willis's *Life of Harvey*. These exact words were not found in the books on this matter in the Library of Congress.

<sup>269</sup> J. P. W. Adamson, *Pioneers of Modern Education*, page 166.

<sup>270</sup> W. H. Woodward, *Vittorino*, page 223.

that listened to expositions, hydrostatics, mechanics, optics and other divisions of this branch. But these up to fifty years before were only hollow sounding names, they meant nothing really as the whole of "natural philosophy" at Edinburgh was only a rehash of Aristotle's utterances on that subject.<sup>271</sup> In other places in earlier times there had been lectures on physiology, "mixed or imperfect bodies, or perfect bodies." Meteors were a type of the former, while the metals, plants and animals were classed as perfect.<sup>272</sup>

#### THE ATTITUDE OF THE GREAT THINKERS.

Even the great names that we are accustomed to revere excite only the pity and derision of even the half educated among us to-day if we only consider their attitude towards science. The great Lord Bacon "flounders like a stranded leviathan when he seeks to explore the coasts of physical science."<sup>273</sup> John Locke, who was so sane, and so prophetic of the educational development of to-day, is very hazy and confusing when he makes an incursion into science, reducing nature to spirits and physics, finally confessing that it is too deep a matter for man to understand. The philosophers who did have something of courage in their opinions were halting and stammering, the religious leaders were timid and obscure. Melancthon is a specimen. He gulps down Aristotle in numerous broken doses, he sets out with metaphysical fogs, slides into some material descriptions, and closes with religion and prayer, all a theological thicket, although he claims to be discussing physiology.

#### JOHN BAPTIST PORTA.

But it is among the professional scientists of the day that we run across the densest conglomeration of credulity and

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<sup>271</sup> Grant, *University of Edinburgh*, Vol. 1, pages 272, 273.

<sup>272</sup> J. W. Stubbs, page 44, *University of Dublin*.

<sup>273</sup> Eggleston, *Transit*, page 10.

classicism. A voracious gosling was Porta, greedily swallowing anything that had Latin or Greek mold on it. Aristotle is to him the final clincher for the most startling marvels. So simple too and frank in his self-confidence that he is amusing. It is a breath of freshness that strikes us when he says that "if ever any man labored earnestly to disclose the secrets of nature it was I," and this too in his second edition, thirty-five years after his first which had come out when he was the mature age of fifteen. "Cost me much study, travel, expense and much inconvenience" but he is content to make all this sacrifice in order to remove "all blindness and malice for finding both truth and profit."

There is no cloying sense of modesty here to embarrass our bold scientist and he does not falter at almost any topic of nature. His *Natural Magic*<sup>274</sup> bridges theory and practice, the latter being a recognition of the spirit of the times. He is tintured with abstractions. To him the whole universe is sexual, fire is male, air, female; water is male, earth, female; planets are partly both and mercury decidedly bisexual. All monstrosities are swallowed whole. Water birds come from rotting wood, eels from mud mixed with rain water or from dead horses, fish from froth and oysters from frothy mud. The loadstone attracts iron because of the exceeding love between the two so that the iron will stand on end as if it held up its hands in supplication to the loadstone.

But it is in his account of the origin of life that he sails out into the dark borders of superstition. In the early times, as he develops his notions, the soft and slimy earth was soon dried by the heat of the sun and tumors and swellings were produced on the surface and uppermost parts of the earth. "In these tumors were contained and cherished many putre-

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<sup>274</sup> *Magia naturalis*, libri viginti, Batavorum, 1651, 12mo, pages 670. with index afterwards.

factions and rotten clods, covered with certain small skins; this putrefied stuff being moistened with dew by night, and the sun heating it by day, after a certain season became ripe; and the skins being broken, thence issued all kinds of living creatures." Those that had the most heat were birds, the earthly ones were beasts while the water ones were fish, but a medley of all these were walking creatures. Now, the heat of the sun continuing destroyed this creative capacity of the globe so that all the different species were the result of crossing the breeds of these.

His grave recipe for the generation of bees from dead cattle would surely have called down upon him the society for the prevention of cruelty to animals of the present day. Take an ox, he says, two or three years old and have lusty fellows kill him with their cudgels, breaking his bones without drawing any blood or striking him too fiercely at the first—pounding him to death gently. Then cast honey under him, close the doors and windows securely and after a few weeks "you shall find the room full of bees clotted together and nothing of the ox remaining besides the horns, the bones and the hair." The best bees he believes come from young oxen while the baser bees come from lower creatures—perhaps the mule or the donkey.

But all of his profundity of information must be put at the disposal of men for their aid and comfort. With the throbbing soul of the philanthropist he is stirred especially to help the weaker sex. He has full directions for the preparation of unguents, cosmetics the removal of hair from the face, for whitening the skin and reddening the cheeks. Especially solicitous is he for the hair of women as women dote on "yellow shining and radiant" hair, gray hairs of course being very distasteful to them. To save this mortification he tells them to annoint their hair with a corruption of leeches in vinegar in a leaden vessel but they had better hold oil in their mouth at the time of application else



the stuff will strike through and make their teeth black also.<sup>275</sup>

He is not alone in his notions of nature. Some of his contemporaries narrated still greater wonders.—Such as a boy with an elephant's head, a man with an eagle's wings and a horse's tail, other men with one, two, three and four eyes. The keenest intelligence was solemnly attributed to animals. Bears were said to eat honey in order to have the bees sting them so as to get a pleasant sensation or to revive them from torpidity or to restore failing sight by letting out blood. The very fat hippopotamus deliberately rolled himself over sharp pointed reeds to bleed himself and prevent apoplexy—a kind of river horse-doctor.

#### THE SCIENTIFIC BAGGAGE TAKEN TO AMERICA.

Our ancestors were the dupes that outfitted themselves liberally in science from these abounding depots of credulousness. They went to a strange land and soon adjusted themselves to the seasons and the products when they had to find food or provide shelter. But in the realm of thought whenever they needed a pin or button they always rushed to those trunks that they had lugged along with them across the Atlantic. They relied on the ancients with the most trusting childlike faith for any explanation of natural phenomena that came under their eyes. The forests around them rang with the cry of bird and beast, but when they wanted to solve any puzzle that they noted in animal life they leaped back years to Pliny, "the greatest gull of antiquity." The best educated among them stared in the greatest amazement at everything unusual and clutched at baseless theories that the few naked savages around them would have scarcely tolerated. The ministers "acted as soothsayers and expounded the hidden meaning of monstrous births and even played showman to exhibit

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<sup>275</sup> *Natural Magic*, page 235.

these ghastly messages from the Almighty."<sup>276</sup> The doctors were almost as crude and primitive as medicine men in Central Africa. They looked up to Paracelsus and wrought cures on the principle of like by like. A toad has warts therefore the application of them is good for small pox. If you suffer from jaundice, why color the milk that you drink with saffron and you will be free from your trouble.

#### CHARLES MORTON AS A SCIENCE TEACHER IN AMERICA

But a composite photograph is never as near the truth as an exact likeness to some individual who is a fair example of the group. Luckily we have such a portrait in Charles Morton who came over from England highly recommended to teach science in Harvard University, the apex of education and learning in the new world at that time. He left his imprint himself in scholastic works on logic and physics. There are several copies of the latter in manuscript, copied according to the fashion then by the boys and young men before him, besides the printed form.<sup>277</sup> In addition to these he preached a very profound sermon—still for inspection to-day.<sup>278</sup>

Here we have him at his best because he is uttering after the most prayerful and fullest meditation and investigation. He is a voice as he thinks for the great Ruler of the Universe. His whole soul is absorbed in the search for truth. This contains the spirit of his scientific conceptions, and through him we can see the greatest height attained by science in his day.

He gets his text from Jeremiah, eighth chapter, seventh verse; the stork in the heavens knoweth her appointed

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<sup>276</sup> Eggleston, *Transit*, page 16, relying on Sewall's *Diary*, Vol. 2, page 493.

<sup>277</sup> *Compendium Physicac*, 1687; *Philosophia Naturalis*, 1707; both in Harvard University.

<sup>278</sup> *Harlician Miscellany*, Vol. 5, pages 498-511.

times, etc. The migration of birds had been a great mystery for the ages past and now this minister of the gospel is going to make the whole matter as clear as the noonday sun. What becomes of them when they go away from New England, that is what he wanted to find out. They go to the moon, "the nearest concrete heterogeneous or earthly body of the planets," but that was some distance to fly, some 200,000 miles he remembered. But a race horse can easily cover a mile in five minutes when he is hindered by his weight and the air, but a bird is not embarrassed by either as he weighs nothing and the air is no obstruction. He could on his wings make 125 miles an hour, 3,000 a day, 180,000 in two months. There it is all before you, two months going, four months remaining, two months returning, four months staying here, twelve months in all. But here is a difficulty that comes up, the moon is flying around the earth in one month, 200,000 miles away. Would the bird not lose time in racing around after the moon? No, the bird is guided by instinct, he sets his gaze on the moon at a certain point in space, and he goes straight there utterly regardless of the whirling motion of the moon. In one month the moon is back there again, in two months the birds light on it. No railroad man could fix up a better time table than Morton did for these birds.

Here another doubt seems to rise in his mind as some people might be very skeptical as to whether a bird could fly at such speed for two months. Well, then, says our pastor, how do you know that there are not some little moons or other bodies floating between the two that birds could roost on and take a rest? There certainly are such rocky islands in the ocean that we know are used for such a purpose, and there may be corresponding "globules or ethereal islands" between us and the moon. Finally, he winds up very lamely for a thorough going logician, they must come from somewhere, you unbelievers don't think

they come from the moon, I know they don't come from the bottoms of the streams, therefore these half-way houses fill the bill.

There had been quite a widely accepted theory that these feathered prodigies on the approach of cold weather plunged into the rivers and streams and hibernated at the bottom until the next spring, but Morton hung back from that solution because he thought it would be rather cold sleeping quarters down there and furthermore the wings would be too wet for them to fly after this prolonged bath.

In his college textbook he was just as ignorant and foolish, and he tried to lighten the sapiency of his lectures by scraps of poetry, altogether original it is to be judged, which might help to impress the explanation. He attempted to expound why the Indian monsoon changed its direction. These currents of air streaming northward strike against high mountains or vast clouds and are thrown back and hence the rest of the year the winds blow in the opposite direction. He is so satisfied with this that he puts it into verse. "From breize, streams clouds the monsoons are North East  
From the Atlantick vapors South and West."

His explanation of earthquakes is almost physiological. They come from the choking up of wind below fermenting. bursting out, causing "tremblings" and "strokes." He puts it more forcibly but not so elegantly:

"In subterraneous caverns winds do frolick  
When mother earth is troubled with the colick."

But through it all he is true to the medieval notion that all knowledge is from the Bible. In his last chapter on the world he says:

"The end of the world is twofold: primary and secondary. Primary: God's glory \* \* \* his eternal power and godhead. Rom. 1:20. Secondary is the use of man (Gen. 1:2:8) have dominion over it and verse 29, behold I have given every herb, etc.

“World’s matter aggregate; from order is  
Maker God, End, his glory and man’s bliss.”

As the van of American science teachers the table of contents of his ambitious production will help to illuminate his general grasp and conception.

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BRATTLE.

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ABRAHAM PIERSON.

There is another relic of these times, older than Morton's teachings that are even more valuable as a witness for the school work in science. Abraham Pierson, a Harvard graduate in 1668, afterwards the first president of Yale College, was very industrious with his pencil in taking notes. His descendants had the historical spirit and it is to this lucky fact that we can to-day go through Pierson's notes which he afterwards used as a teacher at Yale. This little book of less than two hundred pages, partly Latin and partly English, and largely abbreviated in both languages, in a torturous scrawl, epitomizes for us the scientific instruction as well as other branches in both of these great institutions. Along towards the middle of it he has what he himself dubs "Compendium Philosophiae Naturalis" composed of a series of 160 propositions, and virtually definitions of such terms as affinity, motion, porosity, air, water, savor, odor, color, species, senses. Interspersed with these are statements to be proved. The following will give some inkling of the tone of the whole: First, the world is neither from eternity nor able to be of itself, but is a round body the most capacious of all figures sent forth perfect. Second, angels are a spirit, not made of one of the elements, but of rare medium, endowed with reason and will, and ministers of God, having always existed from the beginning, of least materiality but of many forms.

## GRAVESANDE AND ROHAULT.

Another authority of the day was William James Gravesande with his "mathematical elements of natural philosophy confirmed by experiments or an introduction to Sir Isaac Newton's Philosophy."<sup>279</sup> Although he claims to be a sort of introduction to one of the great lights of modern science for the world he was fairly drenched in metaphysical and religious clouds. Holy writ he declares is the whole thing in a nutshell, and reason so perfectly agrees with these divine utterances that the least examination will show the plain fact of supreme wisdom. The whole thing was created by God, and we should not try to go down to the first foundations of things nor should we have an immoderate appetite for knowledge because such greediness has led people into serious errors. There are to be no such gaps and breaks in the road he marks out, for the unwary to fall into, as he fills up the balance of his two volumes with very formal directions, rule of thumb measurements for the many experiments that are attended by diagrams and intricate drawings. No thoughtful application of principles, no logical connection between reason and development of the experiment, though he himself did seem to have some depth of philosophy in him. We can almost believe that he rather dimly understood that heat and light were modes of motion. But he was very timid about getting beyond his own religious limitations because he draws himself back from this venturesome deduction in the next breath as he says the "notion of light has something unknown to us."<sup>280</sup> He is not so far wrong also on the chemistry of combustion but apparently suffers from the same nervousness of drifting

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<sup>279</sup> Originally in Latin, put into English, 3d edition, London, 1738, 2 volumes, 8vo, copy in Congressional Library.

<sup>280</sup> W. J. Gravesande, Vol. 2, page 16, *Math. Elements of Natural Philosophy*.

beyond the borderland of ecclesiastics. He declares that the "burning of bodies is a separation of their parts by the mutual action of the fire and those parts on each other."<sup>281</sup> So far as the mere extent of his treatise goes, it coincides most astonishingly with elementary physics to-day but the spirit is so diametrical to the modern one and besides, in unison with his contemporaries he mixes his mathematics, astronomy, geography, and something of natural history.

Rohault, a Frenchman, follower of DesCartes, had preceded Gravesande at Yale, having been put into Latin by Samuel Clarke.<sup>282</sup> He succeeded Pierson's manuscript notes. We thus have the science authorities for Yale from her beginning down to the end of the colonial period, Pierson, Rohault, Gravesande, Enfield. Rohault like Gravesande has a number of figures, folded at the end of the volume, like him he also ranges over physics, geography, astronomy, meteorology, and biology.

The three are substantially along the same general road and all practically guided by the same conception of science. Metaphysics and religion rule. The first physical theses at Harvard indicate the same drift of science.

Forma est accidens.

The form is accidental.

Quicquid movetur ab alio movetur.

Whatever is moved is moved by something else.

Nihil agit in seipsum.

Nothing acts upon itself.

In uno corpore non sunt plures animae.

In one body are not many souls.

Phantasia producit reales effectus.

An appearance makes real effects.

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<sup>281</sup> W. J. Gravesande, Vol. 2, page 15, *Math. Elements of Natural Philosophy*.

<sup>282</sup> London, 1718, 8vo.



Harvard, Yale, and all the other institutions that had science labored under the thralldom of an unhappy influence. Towards the latter end of the colonial period there are signs that earnest teachers and thinkers were breaking out of these mists that had clung around the schools for ages but for the bulk of this study science was more metaphysical than mathematical.<sup>283</sup>

Yet there was activity, there was observation. Very early in the life of Massachusetts a philosophical society had been formed to meet fortnightly to advance the cause of natural philosophy and to gather specimens of natural history. Most remarkable of all, considering his attitude towards comets, Increase Mather had been the organizer of this body, and some of the collections they made were sent to museums in Europe. There had also been gifts of mathematical and scientific books, Benjamin Franklin having donated some instruments to Harvard.

#### PHYSICAL APPARATUS.

In all the branches of education dealing with man we have books, lectures, reminiscences, but when it comes to science we have these and one additional piece of testimony, a very material one, the laboratory equipment. This does not mean that we know what use was made of balances, mirrors, and machine generally, but we know how serviceable all such helps are to-day and how accurately they gauge the standard in our institutions.

#### APPARATUS AT HARVARD.

At the oldest institution in America we also find the longest lists of apparatus for the study of science in the earlier times. The Harvard Archives do not go back with any fullness farther than 1731 though of course we know that there

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<sup>283</sup> F. Cajori, *Teaching and History of Mathematics*, page 29.

were physical aids used in scientific teaching before that time. But the following rather numerous items will serve as a basis for deductions as to scientific work there, due to the generosity of Hollis who founded the chair of mathematics and science:<sup>284</sup>

*A catalogue of the mathematical and phylosophical instruments, belonging to the apparatus, given to Harvard College by Mr. Thomas Hollis of London, merchant, with price sterling.*

*Mechanicks.*

- |   |       |
|---|-------|
| 1. A strong ballance and stool for measuring the force of falling bodies, .....   | £2- 5 |
| 2. The double cone and brass rules, .....   | 0- 1½ |
| 3. A sett of bodies for experiments of the falling and rolling of bodies; also a small ballance for experiment of the center of gravity, with a support for Ballance, ..... | 1- 5  |
| 4. A Ballance with its weights, false scales and pedastal, .....  | 5- 5  |
| 5. An instrument for estimating oblique powers in the axis in Peritrochio, .....  | 1-    |
| 6 Apparatus for explaining the three kinds of Levers, with a sett of compound levers, ..  | 1- 2  |
| 7. Apparatus for explaining the pulleys, .....  | 3-10  |
| 8. Apparatus for the wedge, .....   | 5-10  |
| 9. A compound Engine, .....   | 5- 5  |
| 10. Apparatus for experiments of centrifugal force, together with apparatus for experiments of light and electricity with solid glass cylinders, .....                      | 8-    |

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£34-15

<sup>284</sup> *College Book, No. 6, Hollis, pages 20-22.*

*Optics.*

1. A large concave . . . . .	}mirrors, . . . . .	£02-10-0
2. A small convex . . . . .		00-12-6
3. A concave cylindrical .		01-10-0
5. An instrument for showing that the lines of the angles of Incidence and refraction bear a constant proportion to each other,		1-10-0
5. Apparatus for experiments of light and col- ors, . . . . .		3-15-0
6. A portable camera obscura, . . . . .		1-05-0
7. A cylinder and picture, . . . . .		2-10-0
8. A small telescope with a concave eye-glass,		0-01-6
9. A single concave, a double concave, and a miniscus glass, also multiplying glass, ..		0-10-0
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		£14-14-6

*Hydrostaticks.*

1. A large stool Ballance with a counterpoise to one scale, a pillar for supporting it a large glass jarr, a Ballance for weighing levity, with all the particulars expressed in Hyd. Plate 1, . . . . .		£8- 0-0
2. A sett of Troy weights 64 oz., with Penny weights and Grains, . . . . .		00-11-0
	A box with lock and Hinges for the scales,	00-07-6
3. Apparatus for the grand Hydrostatical ex- periment, . . . . .		02-02-0
4. Three legg'd syphon, with two syphons, ...		00-12-0
5. A glass with hydrostatical Images, . . . . .		01-01-0
6. An hydrostatical Ballance, . . . . .		01-05-0
7. A model of a sucking pump in glass, . . . . .		00-15-0
	Hydrostatics Pl. 2, Fig. 2, . . . . .	00-03-0
8. An areometer, . . . . .		00-01-0
		<hr/>
		£14-17-6

*Pneumaticks.*

1. Two sets of Tubes for Torricellian experiments, .....	£01-05-0
2. A frame for supporting them, .....	00-07-6
3. Apparatus for Mons. Auzout's experiment, .....	01-05-0
4. A large double air pump with its apparatus, .....	26-05-0
5. A Tube in a screw for experiment against suction, .....	00-02-6
6. Apparatus for the lifting of weights by the spring of air, contained in a bladder, ..	01-10-0
7. A bottle for weighing the air, with a bent pipe for exhausting the bottle, .....	00-17-6
8. Capillary Tubes and Glass plains for the ascent of fluids, .....	00-05-0
9. A pair of brass plains, .....	01-01-0
10. Apparatus for the Hemispheres, .....	04-10-0
11. A syringe for the compression of the air, ..	01-10-0
12. A portable Barometer, .....	01-05-0
13. A Thermometer, .....	00-15-0
14. Six vials in caps, .....	00-09-0
15. 48 ditto without caps, .....	00-08-0
16. A small bowl fountain, .....	00-01-0
17. A Diving Bell, .....	00-02-0

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 £41-18-6
*Miscellanies.*

1. 12 Lbs. of Quicksilver, .....	£03-06-0
2. 12 Glass Tubes of different Bores, .....	00-12-0
3. A Loadstone, .....	02-12-0
4. Solid Phosphones, .....	00-05-0
5. 12 Doz. of Granade Drops, .....	00-03-0
6. 6 Doz. of the Lacryme vitrol, .....	00-02-0
7. Cement and Ladles, .....	00-04-6
8. An hand vice, .....	00-03-6

9. Two spare double screws, .....	00-02-0
10. A duplicate of the Gunpowder Glass un- fixed, .....	00-04-0
11. Tube for Rec. Pneu, p. 2, fig. 2, .....	00-01-6
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	£7-15-6

Cambridge, September 6, 1731.

The particulars of the foregoing Catalogue, the generous benefaction of Mr. Hollis to Harvard College, I acknowledge to be now in my sole custody at Mr. Hollis's chambers for the use of such as are his students and Subscribers to the Hollisian Lectures.

ISAAC GREENWOOD.

#### INVENTORY SEVEN YEARS LATER.

As the foundation for laboratory teaching of science in America it is a just tribute to the memory of Thomas Hollis to give the above in full although college records in 1738 repeat that, with the important addition of the apparatus already at Harvard before the goodness of Hollis had sent a large collection across the Atlantic. The following one is therefore of interest as showing the reliance Professor Greenwood placed upon Hawkins:<sup>285</sup>

*A catalogue of the Mathematical and Mechanical instruments belonging to the apparatus both such as were given to Harvard College by Mr. Thomas Hollis of London, Merchant, and such as before belonged to the college, which catalogue was taken April 19, 1738. Vid pag. 20.*

The numbers here mentioned refer to those on page 20. The plates and figures mentioned are those in Hawkins's *Mechanics, Optics, Hydrostatics*, etc.

1. A strong Ballance with a stool, square leaden weights

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<sup>285</sup> *College Book, No. 6, Hollis, pages 35-38.*

- and perforated brass ball for measuring the force of falling bodies. As. Plate 1. Fig. 2. *Mechan.*
2. A double cone and brass rules. Pl. 1. Fig. 5.
  3. A set of bodies for experiments of falling and rolling of bodies, consisting of three short Prisms of Brass, 1, Octang., 2, Hexang., 3, Quinqang., and a brass Rhombus. Plat. 1. Fig. 3 and 4. The triangular fig. 3 wanting. Also a smaller ball<sup>a</sup> with one brass supporter for the Ballance. Also four brass balls upon an iron wire.
  4. A Ballance with its false scales and weights, viz: bullets hung with brasses and pedestal also a false beam with scales. Plat. 1. Fig. 6, 7, 8, and Pl. 2. Fig. 1.
  5. An instrument for estimating oblique powers with axis in Peritrochio, to be fixed into the Pedestal. Pl. 1. Fig. 6.
  6. Apparatus for explaining the three kinds of Levers consisting of one 18 inch brass rule, a small brass pulley, and four brass Balls. Plat. 2, fig. 5, 6, 7 and 9.
  7. Apparatus for explaining the Pulleys, consisting of a pulley. Pl. 3, fig. 1. Also two treble pulleys, each one on a different axis, Pl. 3, fig. 6, and two treble pulleys move three upon one axis. Pl. 3, fig. 7.
  8. Apparatus for the Wedge, being the Fig. 5 in Pl. 4.
  9. A compound Engine with all the parts described. Pl. 5. Fig. 1.
  10. Apparatus of experiments of centrifugal force, together with the apparatus for experiments of Light and electricity with a solid glass cylinder, all represented. Plat. 5. Fig. 6. Also *Pneumat.* Pl. 6, in all the figures of it.

### *Optics.*

1. A large concave.
2. A small convex.

3. A concave cylindrical.  
Mirrors.

4. An instrument for showing that the lines of the angles of incidence and refraction bear a constant proportion to each other. Plate 2. Fig. 2.
5. Apparatus for the Experiment of light and colour, consisting of one large double convex lens, of 7 or 8 inches diameter and about 2 foot focus, with its handle loose. Another ditto of about 8 feet focus. Two triangular glass prisms, one oblong brass plate with a circular one fastened to it, moving on a centre. Two square boards to receive images upon. A pedestal with a crotch of wood fastened on the top of a strong wire or rod, on which to hang the glass prisms. Two other pedestals which also are common to some other experiments.
6. A portable camera obscura very much broken.
7. A cylinder and picture as represented. Pl. 1. Fig. 8.
8. A small telescope or rather perspective with a concave eye-glass. The eye-glass loose.
9. A double concave. A miniscus and a multiplying glass and a blue pair of spectacles. Mem<sup>o</sup> y<sup>e</sup> simple concave wanting.

*Hydrostatics.*

1. A large steele Ball<sup>a</sup> with a counterpoise to one scale and Pillar for supporting it, with a large glass jarr with a glass vessel with a lock. Also a Ballance for weighing levity, as it is represented in fig. 1, Pl. 1. Also all the particulars expressed in sd plate.
2. A set of Troy weights 64 oz. with penny wts. and grains. Also a box with lock and hinges for the scales.
3. Apparatus for the grand hydrostatical experiment consisting of one flat seat (?) with a strong wire in it

and severall jarrs and glasses hereafter mention'd and number'd.

4. A three-legg'd Syphon with two others.
5. A glass with hydrostatical images, the images much broken. Plat. 2. Fig. 14.
6. An hydrostatical Ballance. Pl. 3. Fig. 5.
7. A model of the sucking pump in Glass. Pl. 3. Fig. 2. The instrument described. Pl. 2. Fig. 2.
8. An Areometer.
9. Four hydrostatic jars referred to in No. 3 above and one thick low jarr or Glass bason.

*Pneumatics.*

1. Two setts of Tubes for Torricellian and other experiments, viz: thirty-one in number and most of them whole.
2. The frame for supporting them unknown.
3. Apparatus for Monsieur Auzout's experiment. Pl. 1. Fig. 6.
4. A large double Air Pump with its apparatus as described. Pl. 2. Fig. 1. (?)
5. A tube in a brass screw for experiment against suction. Plat. 2. Fig. 4.
6. Apparatus for the lifting of weights by the spring of the air contained in a bladder, consisting of low wooden cylinder with a bottom and one round flat leaden weight with a strong perpendicular wire in the centre, and several other weights, the glass being broken. This is represented. Pl. 5. Fig. 7.
7. A bottle for weighing the air with a bent pipe for exhausting the bottle.
8. Capillary Tubes and glass plains, for the ascent of Fluids.
9. A pair of brass plains. Pl. 5. Fig. 6.



10. Apparatus for the hemispheres. Pl. 5. Fig. 1.
11. A syringe for the compression of the air. Pl. 1. Fig. 11.
12. A portable barometer.
13. A Thermometer.
14. Six vials in caps. Some of these broken in experiments.
16. A small bowl fountain. This received broken.
17. A diving bell.

*Miscellaneous.*

1. Twelve pounds of mercury.
2. Twelve glass Tubes of different bores taken notice of in No. 1, Pneumatics.
3. One loadstone cap'd with silver.
4. A solid phosphorus—all consumed in experiments several years ago.
5. Twelve dozen of Granade Drops, all broken, 9 dozen of which broken in bringing to us.
6. Six doz. of Lachrymee Vitrol, few bro't whole.
7. Cement and Ladles.
8. An hand-vice.
9. Unknown what they are.
10. A duplicate gunpowder-glass, unfix'd, one broken. Pl. 2. Fig. 3.
11. Tube for a pneumatic receiver. Pl. 2. Fig. 2.
12. A newly contriv'd steelyard all as described. Pneum. Pl. 5. Fig. 3, 4 and 5.
13. A Transferron being one of those plates described, Plate 4, pneumat., fig. 3.

These three things were sent by Mr. Hollis, Merch. in London, nephew to our worthy benefactor. At another time, Vide p. 29:

1. An orrery with its case.
2. An Auxillary sphere with its case.
3. A large microscope, Wilson's.

Such as here follow were put into the

1. Apparatus from the library.
2. The 24 feet Telescope.
3. The 8 feet Telescope.
4. A box of microscopes, eight glasses.
5. Surveying instruments, viz: a semicircle, a triangle and a chain.
6. An astronomical quadrant of more than two feet radius.

*Cambr., April 19, 1738.*

The particulars of the foregoing catalogue, most of which were sent us by our generous benefactor, Mr. Thomas Hollis, the rest put into the apparatus chamber from the College Library. I acknowledge I have this day received from the Rev<sup>d</sup> the corporation of Harvard College, to be us'd in experiments, Mechanical, Mathematical and Philosophical, for the service of the scholars of the said college, for every of which instruments aforementioned I acknowledge myself accountable to them the said corporation and hereby declare myself obliged to restore them upon their demand.

ISAAC GREENWOOD.

#### THE ATTITUDE OF THOMAS HOLLIS.

There is in the same manuscript repository a letter from this first prominent promoter of scientific study in America, enumerating some instruments that he had sent and also stating his purpose in making this endowment—"The advancement of natural and revealed religion." This extract deserves the space here below for the light it throws upon the philanthropy of Hollis and upon the scientific notions of the day.<sup>286</sup>

*Extract out of a letter of Mr. Thomas Hollis, of London,  
to Col. Hutchinson, Treasurer of Harvard College.  
Dated July 20, 1732, viz:*

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<sup>286</sup>*College Book, No. 6, Hollis, page 29.*

"Inclosed I send you a bill of Lading for two cases. No. T. H. 1. 2. shipt in the Union. John Homans; the one contains a sphere, the other a new invented Engine or machine called an orrery, showing the daily and annual motion of the sun, earth and moon. I have also delivered the Captain a small shagreen case with a *double microscope* and its utensils, which upon receipt I desire you to present, with my humble service to the corporation for the use of the college. I hope Mr. Professor Greenwood will make good use of each, for the promoting useful knowledge and to the advancement of natural and revealed Religion."

#### APPARATUS IN 1764.

It was nearly a third of a century after Hollis penned these sentiments that we have another itemized description of the apparatus at Harvard in the enumeration of the loss suffered in the great fire then. As this has all been published in full,<sup>288</sup> it hardly seems necessary to repeat it here further than the following general sample:

Long list of apparatus burnt 1764, two globes; apparatus for mechanics, as levers," "balances," "compound engines," etc.

In hydrostatics, jars, glass models of pumps, for "hydrostatic paradox," etc.

In pneumatics, for "Torricellian experiment," syringes, barometers, thermometers, etc.

In optics, mirrors, lenses, prisms, camera obscura, etc.

Also orrery, microscopes, telescopes 24 feet long, quadrant of two feet radius, surveying instruments, "a curious telescope \* \* \* for \* \* \* difference of level." Compass and dipping needle, instruments for "magnetical and electrical experiments."

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<sup>287</sup> J. Quincy, *Hist. Har.*, Vol. 2, page 482.

## APPARATUS IN 1779.

Some fifteen years later the ravages of this destruction and conflagration had been largely repaired if we are to judge from the inventory below.<sup>289</sup>

*An Inventory of the apparatus of Harvard College as found therein by the Committee appointed 11 May 1779 for carrying on Mathematical and Philosophical Instruction at the time they took possession of the Key by order of the Corporation. May 20th, 1779.*

## Class I. Altitude I.

1. A cylindrical weight to be used with the inclined plane.
2. A loaded mahogany cylinder for D°.
3. An inclined Plane.
4. A wooden Spheroid.
5. A Tin do.
6. Two wax do.
7. Two leaden balls for pendulums.
8. A brass stand for a Pully.
9. An iron circle.
10. A Brass do.
11. A machine containing the various combinations of pullies with their weights.
12. A pine box, containing one cork, two boxwood, three ivory, and three brass balls, fifteen brass cylindric weights and two wooden cylinders.
13. A mahogany box containing a small glass jar, and a brass stand, together with a circular brass plate in a shagreen case for hydrostatic experiments.
14. A fountain for compressed air, with spouts, syringes and other appendages.
15. Hydrostatic bellows.

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<sup>288</sup> College Book No. 6, Hollis, last part.

16. A graduated semicircle for the hydraulic machine.
17. Four small square copper plates.
18. Six square and three round small steel bars.
19. Four coils of iron, and five D° of brass wire, with six remnants of brass.
20. Five small oblong brass plates.
21. A loaded pine cylinder.
22. Two catgut wheelbands.
23. A brass chain for surveying.

*Alt. II.*

1. A glass model of a sucking pump.
2. A glass model of a diving bell.
3. A glass tube mounted for a water-level.
4. Fourteen glass jars of different magnitudes for hydrostatic experiments.
5. A glass bubble for specific gravities.
6. Tantalus' cup.
7. Two brass ballances.
8. A waxen cylinder.
9. A small tin cup.
10. A glass syphon for the Hydrostatic Paradox.
11. Six glass syphons of different shapes and lengths.
12. Four glass tubes with brass screws at their ends.
13. Five glass d° without screws.
14. A chip box containing six glass bubbles.
15. D° containing six glass images for the magical experiment.
16. D° containing five glass bubbles.
17. A nest of brass weights.
18. A wooden axis in peritrochio.
19. A small stone jugg containing quicksilver.

*Alt. III.*

1. A brass steelyard.
2. A rolling cone and stand.

3. A bent lever.
4. A brass tip to a stand.
5. A Carman's lever.
6. A small brass stand to determine the centre of gravity.
7. A combination of brass levers.
8. A machine for illustrating the wedge.
9. A brass ballance-beam with three scales.
10. A brass 18 in. Ruler.
11. A brass axis in peritrochio.
12. A single wooden wedge with its apparatus.
13. A brass screw.
14. A combination of the screw and Pulley (brass).
15. Two rectangular brass plates for the whirling table.
16. A small mahogany inclined plane.
17. A combination of all the mechanic powers (brass) fitted to an inclin'd plane.
18. A copper scale.

*Class 2. Alt. I.*

1. Leathers for the air pump.
2. Small quantity of wrapping paper.
3. An iron cup.
4. A leaden weight with a brass stand for determining specific gravities.
5. A large glass jarr.
6. A copper flask for determining the weight of air.
7. A model of an Engine for extinguishing Fires, the outer tube broken.
8. Three receivers for the air pump.
9. A machine for shewing the expansion of air.
10. A machine for shewing the respective ratios of refraction and reflexion.

*Alt. II.*

1. Four circular pieces of tin.
2. A chip box, containing 27 leaden, and 2 brass oz. weights for the mechanic powers.

3. D<sup>o</sup> containing 5½ oz. & 4¼ oz. leaden weights for do.
4. A brass stand to hold 2 exhausted receivers.
5. Two brass hemispheres to shew the pressure of air.
6. A glass cup for a barometer.
7. Eight receivers for the air-pump, of different sizes.
8. A Gauge for the air pump.
9. Ten glass-Tubes of different sizes, three of them cap'd with brass.
10. Two electric brass conductors.

*Alt. III.*

1. Four brass screws for the fountain.
2. A jelly glass.
3. Thirteen glass receivers of different sizes, one of them fitted with a bell, & two others adapted to shew the pressure of air.
4. Two lung glasses.
5. A leaden weight with a brass syringe for shewing the elasticity of Air.
6. A small ballance with a cork & a brass guinea.
7. A copper swan neck for a dust air.
8. A glass with a leaden weight for specific gravities.

*Class III. Alt. I.*

1. A Camera obscura.
2. A terrestrial globe of 28 inches diameter.
3. A portable electric machine.
4. An electric battery consisting of 15 Jarrs.
5. A Box conaining two glass plates.
6. Two small rolls of Tin-foil.
7. A box containing one drill plate, 3 hammers, a drill vice, 1 Saw, 2 drills, 11 small files, 1 Vice, 1 Screw plate, 1 whetstone, a file handle, a screw-driver, a pair of shears, and 2 awls.

8. A Box containing 36 prints for the diagonal glass, 6 anamorphoses, a semi-cylindric mirror to be used with the anamorphoses, and 2 squares of window glass.
9. A box containing 12 coated jarrs of different sizes for an electric battery.
10. A box containing 5 towels.
11. An empty box.
12. A drill bow.
13. A piece of sheat lead.

*Class 2. In a Drawer.*

1. Two pair of dividers.
2. A skain of silken cord.
3. A brass sector in a shagreen case.
4. A diagonal scale in a shagreen case.
5. Four wooden Pins with strings for pendulums.
6. A large silken cord.
7. A small quantity of red and green silken cord.
8. Two small pieces of green silken cord of different fineness, and 3 small pieces of silk ferret.
9. Two small plane glass mirrors.
10. Two wooden hemispheres.
11. A multiplying glass.
12. One small convex, and one small concave lens.
13. Eighteen painted glasses for the magic-lantern, 2 of them broken.
14. Twelve painted sliders for the magic lantern.

*Class 3. Alt. II.*

1. Two brass plates and a ring to shew the pressure of air.
2. Fifteen capillary tubes.
3. A large roll of sealing-wax for electrical experiments, broken.
4. Three small glass tubes.



5. Eight larger D°.
6. A mahogany box containing.
  1. A chip box containing a number of lenses of different magnifying powers.
  2. A chip box containing 2 prisms, 3 brass screws, & 2 lenses.
  3. Five prisms of different sizes, fitted with brass caps.
  4. A double prism with brass caps.
  5. A brass plate for optical experiments.
  6. A small glass mirror set in brass.
  7. Two small speculums set in brass.
7. A stand for supporting Prisms.
8. One electric globe mounted.
9. One pyrometer.
10. Two magic Lanthorns with one slider.
11. Two artificial eyes.
12. One lens set in wood.
13. A shagreen box containing a solar microscope, except such parts as are fixed to a window shutter, and a scale of magnifying powers, which is missing.
14. A shagreen case containing a standing microscope.
15. A five feet perspective glass.
16. A mahogany case containing a pair of artificial magnets.
17. A mahogany case containing a variation compass.
18. A mahogany case containing a dipping needle.
19. Several wooden wedges and cylinders.
20. A Pine box containing 1 iron screw, 1 brass pin, two small brass bars for an electric conductor, 1 pair of caliber compasses, four brass screw-kegs, & 7 brass pullies.
21. A pine box containing several models of prisms of various shapes.
22. A pine box containing 2 pair of pliers, 1 pair of nip-

- pers, 2 hand vices, 1 pair of scissors, 6 screw drivers, 1 small steel anvil, 2 awls, 1 knife, 4 gimblets, & a key for the air pump.
23. One chip box containing shot, cork-balls, and a number of small brass screws.
  24. One pine box containing wood screws.
  25. Five small chip boxes containing lead and shot.
  26. One brass arm of the Transit instrument from the old apparatus.
  27. One natural magnet cased in silver.
  28. A brass circle with five glass tubes, fitted for the whirling table.

*Class 3. Alt. III.*

1. One large convex lens.
2. Two smaller d°.
3. One stand for prisms.
4. Two triangular water-prisms.
5. One square d°.
6. One electric globe mounted.
7. One microscopic stand.
8. Two draw tubes for the large refracting telescope.
9. A box containing a lens for a camera obscura.
10. A box containing a solar microscope.
11. A small perspective glass.
12. Six glass jarrs, one of them partly coated on the outside; two coated and filled with iron and brass filings; one with brass filings, not coated; two neither coated nor filled.
13. A magnetic compass, the remainder of an old Theodolite.
14. A case containing an azimuth compass.
15. A d° d° a mariner's compass.
16. Five painted tin utensils for hydrostatic experiments.

17. Twenty-one small spermaceti candles for the pyrometer.
18. Two pieces of wood coated with Tin-foil for electrical experiments.
19. Six vials containing oils of various kinds.
20. One empty vial.
21. One water-prism set in brass, mounted upon a stand.

*Classes I, II, III. Alt. IV.*

1. Two large paper screens for the solar microscope.
2. One apparatus for illustrating the motion of the planets.
3. Three spare globes for the portable electric machine, two of them cap'd with brass.
4. A glass jarr and two bubbles for specific gravities.
5. A glass tube, with a cup at each end.
6. Three spare glass barrels for the fire-engine.
7. Four syphons of different shapes.
8. A Lungo glass.
9. Three receivers with open tops.
10. Three glass tubes.
11. One broken glass mug.
12. Thirty five glass vials for shewing the pressure and elasticity of the air.
13. A compound barometer void of quicksilver and the case unglued in part.
14. A thermometrical Tube for the compound barometer.
15. A wooden apparatus for shewing the effect of refraction.
16. A box containing two thermometrical tubes, one barometrical tube broken in transportation, six barometrical tubes intire, four capillary tubes, one capillary tube broken, and four larger open tubes.
17. A wooden frame containing a compleat set of dials.
18. Eight handles for screw drivers.
19. A bundle of wood-screws.

20. Fourteen handles for screw drivers.
21. A bundle of drills and engraving irons.
22. Eight files.
23. Two yellow bowls.
24. Five leather covers for the air pump.
25. Four brass plates which belonged to the old apparatus.
26. A brass shade for a quadrant.
27. A circular black board.
28. A pine stand for a prism.
29. Two spare globes unmounted for the electric machines.
30. One tube for electrical purposes.
31. A paper cone.
32. A brass slider.
33. Two mahogany cars for illustrating the laws of motion.
34. One chest lock without a key.
35. Three large and four small wooden pulleys.
36. An Aeolipile.
37. A small wooden trough.
38. A wooden endless screw.
39. A tin electric conductor.
40. Five large electric Jars with wooden beds, one of the jars coated and two of them broken.
41. Two tin candlesticks and one pair of snuffers.
42. A number of pamphlets, viz :
  1. Principles of Pump work.
  2. Elements of Opticks, Parts 4th, 5th, & 6th.
  3. Institutions of astronomical calculations.

By B. Martin.

4. Principles of Perspective.
5. Compendious way of finding the autumnal Aequinox by common Arithm<sup>c</sup>, anon :

6. Mountaine on the variation of the magnetic needle.
  7. Nairne's description of a single microscope, 2 Copies.
43. Three short open Tubes.

*Class IV.*

1. A Barometer.
2. An orrery with its stand.
2. A celestial globe of 28 inches diameter.
4. A small box containing appendages to the orrery, and a semicircle for the hydraulic machine.
5. Six Iron screws, and 2 Screw-keys.
6. Four wooden legs for a stool.
7. One surveyor's Iron chain.
8. Eleven loose pieces of mahogany, 8 of them with screws.
9. One small Pully, and one small empty pine Box.
10. One small iron Ladle.
11. A lump of cement.
12. An hydraulic machine.
13. An air-pump.
14. A brass stand for pendulums.
15. A window-shutter with part of a Solar microscope screwed to it.
16. A square black-board.
17. A pine box for the 18 Inch Telescope, which Telescope was entrusted by Dr. Winthrop to Mr. Gan-net & the librarian and is now in their possession.
18. A whirling table and its appendages.
19. Four boxes; one of them containing a refracting telescope, and the other three containing the several parts of the Transit instrument.
20. A chip box, containing a number of screws, with a small brass circle.

21. A cometarium.
22. Two mahogany boxes containing an Eclipsarium and a Tellurium with a Terrestrial globe of 3 inches in a shagreen case.
23. A Planetarium.
24. A small auxillary sphere.
25. Two electric globes mounted.
26. A diagonal glass.
27. A brass screw key.
28. Two brass cocks.
29. A vial of oil.
30. A Towel and Pincushion.
31. A Thermometer.
32. A delph bowl.
33. A plane mirror, the frame unglued.
34. A concave mirror.
35. A convex d<sup>o</sup>.
36. A cylindric do concave.
37. Four maps.
38. A view of several Transits of Venus.
39. Martin's advertisement framed.
40. D<sup>o</sup> wonders of the cometary world.
41. D<sup>o</sup> view of the Solar system.
42. D<sup>o</sup> Synopsis Scientiae celestes.
43. Two tables.
44. A large chair broken.
45. A surveyor's chain of 50 links.
46. A Thermometrical scale.
47. A Theodolite.
48. A reflecting telescope with a micrometer.
49. A mahogany box containing Hadley's Quadrant. There is also in the apparatus a Jewish lamp with its appendages belonging to the college.

In the Philosophy chamber are the frames of two electrical machines belonging to the apparatus. A mahogany

stand for the Transit Instrument, and a brass quadrant of four feet Radius.

*At the House of, Mrs. Winthrop.*

1. A clock.
2. A standing quadrant of 2 feet Radius.
3. An acromatic Telescope—the frame damaged.
4. A large reflecting telescope.
5. A mahogany case containing a brass 3 feet ruler.
6. A reading glass set in silver in a tortoise shell case.
7. An Oaken box containing an hydrostatic Ballance.
8. Farenheit's Thermometer.
9. Two boxes for the clock and the acromatic telescope.
10. Two oaken boxes containing a spirit level and its stand.
11. The eye piece of a refracting telescope.

CALEB GANNETT,

JAMES WINTHROP,

} *Comtee.*

Copy examined by Saml. Langdon, Pres<sup>dt</sup>.

#### APPARATUS IN 1790.

As a contrast to the extended items above it is worth while to show how the institution had come through that terrible struggle for our independence although the period extends beyond the general limits for this study.

*An Inventory of the apparatus of Harvard University taken  
January, 1790.*

#### *Class I.*

Under the first shelf—some crown paper.

#### *Alt. I.*

1. A cylindrical brass weight, to be used with the inclined plane.
2. A loaded mahogany cylinder for d°.

3. A tin spheroid.
4. A wooden d°.
5. A brass stand with a pulley.
6. A loaded pine cylinder.
7. A large cylindric brass weight.
8. A machine containing the various combinations of pullies with their weights.
9. A pine box containing one cork, two box wood, three ivory, two leaden, and four brass balls, and fifteen cylindric weights.
10. An oaken box containing a hydrostatic balance.
11. A fountain for compressed air, with its appendages.
12. Hydrostatic bellows.
13. An iron and a brass circle.
14. An inclined plane.
15. A graduated semicircle for the hydraulic machine.

*Alt. II.*

1. A brass top to a stand.
2. Two chip boxes, one containing five, and the other six glass bubbles.
3. Two d° one containing six, and the other three glass images.
4. A small tin cup.
5. A piece of cork loaded with lead and two wooden cylinders.
6. A waxen cylinder, two waxen bodies in form of an egg and two small waxen balls.
7. A glass loaded with lead.
8. A small stone jug, containing quicksilver.
9. Three beakers.
10. A glass syphon for the hydrostatic paradox.
11. A mahogany box containing a small glass jar, a small pair of brass pliers, a circular brass plate, in a shagreen case and a hydrometer.



12. Two glass jars and three glass bubbles for specific gravities.
13. A wooden axis in peritrochio.
14. Two glass models of a diving bell.
15. Tantalus's cup.
16. The top of a machine for impregnating water with fixed air.
17. A glass fitted to take off the upward pressure of fluids.
18. Seven glass jars of different sizes.
19. A glass fitted to take off the downward pressure of fluids.
20. A mahogany case containing a brass three feet ruler.
21. A glass model of a sucking pump.
22. A glass machine to exhibit a natural fountain.
23. Eight glass tubes and four others with brass screws at their ends.
24. Six glass syphons.

*Alt. III.*

1. Three brass scales and one copper d°.
2. Two brass balances.
3. A machine for illustrating the wedge.
4. A brass axis in peritrochio.
5. A bent brass lever.
6. A carman's lever.
7. A compound brass lever.
8. An eighteen inch brass ruler.
9. A nest of brass weights.
10. A brass balance beam.
11. A brass screw.
12. A small brass stand to determine the centre of gravity.
13. A small mahogany inclined plane.
14. A single wooden wedge with its apparatus.
15. A double cone and stand.
16. A combination of the screw and pulley in brass.

17. Two rectangular brass plates for the whirling table.
18. An iron wire and two small brass balls.
19. Two clip boxes, one containing eight half-ounce and four quarter-ounce, and the other twenty-seven one ounce leaden balls.
20. A combination of all the mechanic powers in brass, fitted to an inclined plane.
21. A brass steelyard.

*Class II.*

Under the first shelf.

1. Seven brass remnants, one coil and almost another of iron wire, together with some remnants of iron and brass wire.
2. Three large broken catgut wheelbands and a few pieces of catgut and hempen cord.

*Alt. I.*

1. A large glass jar and leaden weight with a brass stand for determining specific gravities.
2. Two parts of a receiver.
3. A machine for shewing the respective ratios of refraction and reflection.
4. A model of an engine for extinguishing fire.
5. A copper flask for determining the weight of air.
6. A receiver.
7. A machine for shewing the expansion of air.

*Class II. Altitude I.*

Drawer.

1. Thirteen painted slides for the magic lantern.
2. Eighteen painted glasses for the magic lantern—two of them broken.
3. About five yards of green Persian silk.
4. Two small plane glass mirrors.

5. A reading glass set in silver in a tortoise shell case.
6. A small convex and a small concave lens, each in a horn case.
7. A multiplying glass.
8. A spirit level belonging to the astronomical quadrant.
9. A small vial with papers fastened to it.
10. A brass sector in a shagreen case.
11. A brass diagonal scale in a shagreen case.
12. Two pair of brass compasses.
13. Two wooden hemispheres.
14. Four wooden pins with strings for pendulums.
15. Two wooden models of towers covered with paper.

## CARE OF THE APPARATUS.

It is not an unknown thing for a college to have a rather respectable variety of apparatus without making any use of it practically but there is evidence in the Harvard Archives that something was done with these implements of science. Either they were handled very carelessly or they were of real service. The following bill of expenses for repairs is enough demonstration. There may be others like it but this is a fair sample, during the incumbency of John Winthrop who did so much to advance the work of science:<sup>289</sup>

*Expenses for the apparatus from April, 1740, to April, 1741, allow'd the corporation June 15, 1741, being signed by the mathematical professor.*

1740.

April 9.	To cash p <sup>d</sup> for 4 turned balls for various experiments with hooks to be screwed in, viz, 1 Ivery, 1 Boxwood & £ s. d.	
	of lead, .....	3. 5.
July 31.	To 2 Sheepskins, .....	0. 6. 0

<sup>289</sup> College Book, No. 6, Hollis, page 47.

- Sept. 13. To 4 hoops for electrical experiments,.. 0. 4. 0  
 Novr. 4. To mending the portable camera obscura, ..... 0. 5. 0

1741.

- April 3. To turning a loaded cylinder & 3 balls of light wood, ..... 0. 8. 0  
 To 2 lbs. lead for the loaded cylinder & a plummet for the astronomical quadrant, ..... 0. 2. 4  
 April 18. To a set of grain weights, ..... 0. 1. 6  
 April 27. To a plain mirreur for optical experiments, ..... 0. 12. 0

The acco. of Jno. Dabney, mathematical instrument maker, for work done at Sundry times.

- June 21. To fixing the astronomical quadrant by making a skrew, putting in cross hairs & turning a (cell) to hold a smook'd glass and cleaning it through-out, ..... 1. 8. 0  
 May 24. To fixing cross-hairs in a cell in the 8 foot telescope, ..... 1. 6. 0  
 May 30. To making a spring for the strong Ballance for measuring the force of falling bodies, ..... 0. 8. 0  
 Sep. 25. To mending the ballance for weighing levity, ..... 0. 13. 0

1741.

- Febr. 24. To brass wire for plum lines, ..... 0. 3. 0  
 March 13. To fixing a screw on the handle of a large optic lens, ..... 0. 5. 0

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£9. 6. 10

(Signed) JOHN WINTHROP.

## AT YALE AND ELSEWHERE.

If the data were as abundant for the other institutions as for Harvard we might be able to repeat these lists to a considerable extent but it is unnecessary even if possible. There could have been no great difference in the progressive institutions of the day. A very brief glance is afforded of the facilities at Yale by President Stiles some two or three years beyond the end of our colonial period, but it is enough for us to see that Yale was moving along the same road with her sister a few miles northward.<sup>290</sup> Here in a blunt sort of way we have the following list:

President Clap's planetarium about 7 ft. diameter.

Mr. planetarium, exhibiting astronomical movements by mechanism.

Mr. Austin d<sup>o</sup> in wires about 3½ diameter.

Mr. William's cometarium; Mr. Austin's Lunarium, air pump, hydrost. balance, barometer, sextant, prism, specula sphero-concave & plano-concave microscope; telescope a reflector; theodolite.

Mr. Clap's comet of 1774.

Hadley's quadrant, 2 pair globes.

Brass d<sup>o</sup> astronomical.

Small electrical apparatus.

Compleat sett of surveying instruments.

Paintings of the human body skined Anatomical.

Human skeleton.

A portable sextant about 5 ft. radius.

According to an experienced, capable teacher of physics,<sup>290a</sup> these lists indicate a good equipment in elementary optics and hydrostatics, but a poor outfit for mechanics. Naturally the appliances for sound and electricity are very meager, as but little development had been made in those branches.

<sup>290</sup> E. Stiles, *Diary*, June 23, 1779, Vol. 3, page 348.

<sup>290a</sup> W. A. Hedrick, Ph. D., Washington, D. C.

The whole of the science came from tiny rootlets far down in the mold of ignorance and superstition. A struggle it was with generally accepted religion and with strongly entrenched conservatism for this little plant to push its way up on a level with the humanistic branches. Latin had been in the saddle for centuries practically, alone, beating off every aspirant who wished to share that honor. Greek never climbed up alongside of her, logic, ethics, and philosophy even were only adjuncts. Mathematics had but little more success. Finally the last champion from the outside comes forward in the guise of science. At first he had to wear the Latin garb and to follow the old beaten track of question and answer, of dogmatic statement, of directions without reasons, of dead memorizing of the words of the printed page or from the master's lips. Slowly inventiveness came to the aid with apparatus, and eventually with laboratories but not until far into the nineteenth century. There is no evidence whatever that any of this apparatus was used by the students. Very likely the class only viewed portions of it as the teacher performed experiments in front to illustrate some point.

Of the scientific attitude as it is cultivated to-day, of cold, dispassionate study of nature without the lingering flavor of authority or of religion, our colonial ancestors knew nothing. Of the great range of subjects now in profusion in one-half of our colleges the colonial youth had no conception. Substantially, he had no geology, no zoology, no chemistry, and but little botany. Physics alone was prepared for him with anything like the fullness of to-day. For a long time it was an off-shoot of mathematics from which it originally sprang. But in the dim light of the dawn the soil was being stirred and the seed being dropped from which we have reaped so abundantly. To that extent are we indebted to our colonial ancestors for preparing the way.

## CHAPTER VIII.

### DISPUTATION.

“They dispute before dinner; they dispute after dinner; they dispute in private and in public, at all times and at every place;” thus runs the description of one of the leading educational functions of the middle ages, left us by one of the stars of the period, Giovanni Ludovico Vives who died in 1540, a little under fifty years of age. A Spaniard, educated in France, teaching in the Netherlands, lecturing in England, writing profusely on educational topics, he was in the very center of the vortex, with every opportunity of observing all phases of the whirling stream about him.

The exercise did become absurd but its origin was natural, even necessary. It degenerated into the spinning of cobwebs in a circle, there was incessant movement but no advance, a species of marking time, treading ostentatiously but getting nowhere.<sup>291</sup> But the intellectual conditions, the very structure of social life itself forced this product into being. Authority reigned, in conduct, in morals, in religion, and in intellect. The Bible, the church fathers, the classical authors, the formal deliverance of ecclesiastics, were the metes and bounds for mankind, and Latin was the medium of utterance. In these pages were rules for the guidance of our daily steps, in them were the finger posts to the shores of eternity, in them was truth on all the relations of life whether of the head or of the heart. To weigh, to analyze, to criticise, to melt in the crucible of logic, to dissect, to arrange; to combine the ideas contained in these sources, that was the refined essence of edu-

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<sup>291</sup> Eggleston, *Transit*, page 249.

cation. Discussion became a passion, dialectics became a creed, disputation was almost an act of worship, textual study was almost a supersition, the polemical faculties were sharpened. Education gloated on the past, poring over lands already trodden by thousands of feet instead of seeking new roads in other fields. The dead hand shaded the world.

#### DISPUTATION A PATRIARCH.

There was the sanctity of conservatism and the blessing of age upon the discipline. Socrates was not the father of it but he was a very great promoter of it. His wonderful pupil, Plato, assisted and preserved the method. The title itself of the Tusculan Disputations of Cicero evinces his aid in the cultivation of this process. It was a slow growth for centuries, perhaps showing but little increase of strength till Charlemagne's pedagogue, Alcuin, has left his use of it in his educational dialogues. A century or so afterwards, in the ten hundreds, at the University of Rheims, greater stress was laid upon it, elevating it into the ranks of the regular studies.<sup>292</sup>

Some two centuries after came the fruition in the brilliant lecturer, Abelard, who had such a daring romance in his career, especially for a closet student. He stood for the sovereignty of dialectics. He perfected the system which was the soul of scholastic philosophy and lasted for cycles of years.<sup>293</sup> From him onward came the abundant Amazonian foliage.

#### TEACHERS ARGUE.

Both teachers and pupils were entangled in this luxuriant growth. It was the same problem for the two to squeeze out the meaning from written words. But it must have

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<sup>292</sup> S. S. Laurie, page 62, *Rise of Universities.*

<sup>293</sup> Compayre's *Abelard*, page 21.



been a shrewd educational captain of the day that required the instructors to hold disputations among themselves in the presence of the students. Weekly in the University of Paris, for a time, there were these joint meetings in which one of the staff would defend a proposition while another would attack. What a stimulus to the master to be thus tested before his class, what a squelcher to pedagogical conceit and what a help to clearness of vision.<sup>294</sup> They were fortified, buttressed and armored with thorny syllogisms, more agile and more resourceful in contests with their youthful pupils. Not seldom too, we can easily conceive, that they went from words to blows or at least to undignified quarrels in which the personal element would be far more apparent than the logical. There is one little incident that may be a key hole glance upon a room full of bitter acrimony and loud jarring of voices. Newton's theory of the vacuum supplied an opprobrious epithet that one disputant applied to the inside of the other's head, that that was the one vacant space in all nature. Vives is very graphic, most likely including the teachers, when he says "men shout out till they are hoarse; they make use of insutling speeches and threats, they even come to blows, fights, and buffetings. Discussions degenerate into quarrels and quarrels into fighting."<sup>295</sup>

#### THE ENTHUSIASM OF THE PUPILS.

But the zeal and energy of youth mounted the highest. They were not only eager for this kind of verbal fighting in the school room but they were ready for such fray all the time, getting up "questions on the simplest propositions. On the mere words *scribi mihi* they put questions of gram-

<sup>294</sup> Compayre's *Abelard*, page 174.

<sup>295</sup> Compayre's *Abelard*, page 189, quoting from Vives. Stow in his *Survey of London*, Morley edition, speaks of the decline of the custom of the masters disputing with each other.

mar, physics, and metaphysics. They had no concern for truth, but sought merely to defend their own opinions."<sup>296</sup>

But there is a dash of stronger color in England, than to be seen in this general picture of European conditions by Vives, furnished by an observer of London life just about a decade of years before our fathers set foot on Virginia soil in 1607. Of the contentious, high-keyed, shrill voiced mob of boys pushing and crowding, stamping and gesticulating, scratching and striking, on some green sward in this mightiest city of the earth, we have realistic scenes from the pen of this quaint author who wrote as follows: "As for the meeting of Schoolmasters on festival days, at festival churches, and the disputing of their scholars logically, whereof I have before spoken, the same was long since discontinued. But the arguing of schoolboys about the principles of grammar, hath been continued even till our time; for I myself (in my youth) have yeerely seen, on the even of Saint Bartholomew the Apostile, the scholars of divers grammar schools repair unto the churchyard of Saint Bartholomew the priory in Smithfield where upon a bank bordered about a tree some one scholar hath stepped up and there hath opposed and answered, till he were by some better scholar overcome and put down. And then the overcomer taking the place, did like as the first; and in the end the best opposers and answerers had rewards, which I observed not; but it made both schoolmasters, and also good scholars (diligently against such times) to prepare themselves for the obtaining of this garland."

He also paints street fights between boys of Saint Anthony and Paul's Church schools; one set would call others Paul's pigeons as many pigeons at Pauls, but these would retort with "Saint Anthony's pigs" as Saint Anthony was always figured with a pig following him. But they "did for a long season, disorderly in the open street, provoke one

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<sup>296</sup> Thus records Vives, as quoted, page 189 of Compayre's *Abelard*.

another with *salve tu quoque; placet tibi mecum disputare? placet.* And so proceeding from this to questions in grammar, they usually fell from words to blows, with their satchels full of books, many times in great heaps, that they troubled the streets and passengers, so that finally they were restrained with the decay of Saint Anthony's school."<sup>297</sup>

#### THE SCOPE OF DISPUTATION.

This fiery fervor of controversy extended up and down, to right and left. It was nurtured in the universities and it was fostered in the training schools. In the University of Paris the regent met his pupils three times daily, at sun rise, noon and evening. At one of these meetings disputation held the floor.<sup>298</sup> It began with theology, in an attempt to extract the ideas first, and later in a burning effort to reconcile dogma with reason. Here it attained its abounding growth, here was its favorite haunt. From this embryo it spread to the philosophical branches, to law, and to medicine. Even disease was to be treated with the syllogism. Grammar, that is Latin, mathematics, and all other subjects of pedagogical interest were washed in this acid of the mind. Even the declensions, both of nouns and verbs were subjected to this strainer.

#### QUESTIONS DEBATED BY MEDIEVALISTS.

Fortunately many specimens of the topics discussed have come down to us, though most largely in theology. There are however enough in other domains to give us a tincture at any rate of the whole volume. Alcuin has faint streaks of this method in his goat like quips and starts in one of his dialogues, running thus :

<sup>297</sup> Stow's *Survey of London*, edition of 1633, pp. 64, 65.

<sup>298</sup> S. S. Laurie, page 271, of *Rise of Universities*.

- “What is language?”  
 “The betrayer of the soul.”  
 “What is the tongue?”  
 “The whip of the air.”  
 “What is snow?”  
 “Dry water.”<sup>299</sup>

Of a higher and more sustained flight are some that Milton inhaled in his ponderous style. Seven of these have been gathered from the wrecks of time and are appended below.

1. *Utrum dies an Nox Praestantior.*  
 Whether Day or Night is the more excellent.
2. *De sphaerarum concentu.*  
 O the music of the spheres.
3. *Contra philosophiam scholasticam.*  
 Against scholastic philosophy.
4. *In rei cujuslibet interitu non datur resolutio ad Materiam primam.*  
 In the destruction of anything whatsoever there is no resolution into first matter.
5. *Non datur formae partiales in animali praeter totalem*  
 There are no partial forms in an animal in addition to the total.
6. *Exercitationes nonnumquam ludicras Philosophiae studiis non obesse.*  
 Occasional sportive relaxations are not obstructive to philosophical studies.
7. *Beatiores reddit homines ars quam ignorantia.*  
 Art is more conducive to human happiness than ignorance.

Three of the above were recited in college, three in the public schools, while another was considered as a burlesque

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<sup>299</sup> West's *Alcuin*, page 106.

upon the exercise of disputation, and delivered at a meeting of the students.<sup>300</sup>

But it is in the realm of religion that we find a thicket of them. Many of them are absurd, they would be worthy of a place here for ridicule only, if we did not remember the tense earnestness with which genuine young souls once tackled these problems.

“How many angels can stand on the point of a needle?”

Can the rite of baptism be performed with air, sand, or earth; with beer, fish broth, or rose water, as well as with water?”

“What is the interior structure of Paradise? What do the angels do with their bodies of which they have made use to fulfill a mission on earth? What was the color of the Virgin’s skin?”

“Why did Adam eat an apple instead of a pear?”<sup>301</sup>

“Where was the earthly paradise?”

“What was the forbidden fruit?”

“Where was Lazarus’s soul while his body lay dead?”

“What sort of bodies shall we have at the resurrection?”<sup>302</sup>

Not all were in the form of question and answer. Some were more what we would call a proposition at the present day than a struggle of wits. A professional theologian, Melancthon, furnishes us a good example of this sort of question in his *Disputatio de Baptismo* which proceeds in regular steps as follows:

1. Baptism is the sign of promised grace.
2. Nor is the significance to be referred to one time but to the whole life.

<sup>300</sup> Masson’s *Milton*, Vol. I, page 241.

<sup>301</sup> Seeley quotes several of these from the German history of education by Schmidt.

<sup>302</sup> R. H. Quick’s *Locke*, page 193.

3. Verily does Baptism justify since comforted by this sign we believe our sins to be remitted through Christ.

4. When Paul says the Israelites passing through the Red Sea were baptized it is to be understood they were truly Baptized.<sup>303</sup>

"Can God order men to do ill?"

"Can He make man incapable of sin?"

"Could He have made the world better than it is?"

"Can He be comprehended under a predicate?"

"Can He create a universal which has no particulars?"<sup>304</sup>

#### JESUIT DISPUTATION.

Such an important exercise had its own pedagogical harness. There were formal rules drawn up for the proper carrying on of these verbal duels. None of the educational agencies attach more importance to this discipline than that organization, wonderful both in religion and in education, the Jesuits. Robert of Sorbonne, founder of the college of that name, one of the foremost men of his order, struck to the very core of the pedagogical notions of the day when he laid down the principle "nihil perfecte scitur nisi dente disputationis feriatum," or "nothing is perfectly known unless masticated by the tooth of disputation."<sup>305</sup> On this foundation the Jesuits built declaring that one disputation did more good than many lectures. They held that theology and philosophy were acquired by discussing not by hearing. In such contests all energies they held are wrought up to the highest pitch. Besides in that era of religious competition with the growing force of the reformation they very wisely saw that victory in such struggles was an advertisement for the school, as wise in their declaration as any of

<sup>303</sup> From Bretschneider's work on Melanchthon.

<sup>304</sup> J. A. Froude's *Erasmus*, page 123.

<sup>305</sup> Hughes's *Loyola*, page 208, quoting from Vaughan's *Aquinas*.

us are to-day in the physical counterpart of athletics but on a higher plane. They knew human nature and always insisted on an audience because argument "freezes except in a crowd." They gave two hours weekly in their ordinary schools to disputation, forcing the teachers to be present. Before 1600 they drew up a most comprehensive outline for the proper conducting of this exercise.<sup>306</sup>

#### ENGLISH INSISTENCE.

At the University of Cambridge it was an ironclad stipulation that every candidate for a degree should have at least two of these public acts in the university during the last year before graduation, besides the minor ones in his college. Each one would hand in a list of three propositions that he would maintain in debate and usually a moral or metaphysical one would be selected as the gauge for battle. Then he as "respondent" would face his adversary as opponent. In such a large institution it became a regular performance immediately after dinner in either the university or the college, often times it was an intercollegiate contest though it is not clear that the moderator gave a decision in every instance.

There was all the weight of governmental authority behind this as one of the regular duties of the university. The three following chapters from the Statutes of Elizabeth for the government of Cambridge will show how high disputation was in the curriculum.<sup>307</sup> The directions are given in some detail, covering the times and the qualifications necessary for the proper performance of this task, all in the original Latin.

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<sup>306</sup> In the *ratio studiorum* of 1586 is an entire chapter on disputation, to be found in volume 5 of *Monumenta Germaniae Pedagogica*, pages 100-107.

<sup>307</sup> Dyer's *Privileges of Cambridge*, Vol. 1, pages 173-174.

## DE DISPUTATIONIBUS SOPHISTARUM.

Ordo disputationum hic est. Inter sophistas veterrimus se responsorem exhibebit, et ordine sequentur alii juniores ad finem illius Anni. Primus dies Termini erit decimus Octobris: non respondebit, nisi qui secundum annum expleverit. Tres principes questiones proponat, unam in Mathematicis, alteram in dialecticis, tertiam in Philosophicis naturalibus aut moralibus; quas Triduo ante affiget valvis Scholae suae. Caeteri contra disputando. Ubi responsor haesitaverit, moderator alter si possit nodum dissolvit. Tempora earum disputationum erunt Diebus Lunae, martis, Mercurii, Jovis et veneris, a prima post Meridiem ad tertiam. Scholae Moderator per singulas Disputationes tres suo Arbitrio permittat, vetustatio ordine argumenta Respondenti proponere praeter principatem Disputatorem."

## DE BACCALAUREORUM DISPUTATIONIBUS.

"Baccalaureorum Disputationes fient Die Veneris a nona ad undecimam si nulla tunc magistrorum Disputatio sit; tunc enim fient ab Hora prima ejusdem Diei usque ad tertiam Respondebit non nisi Baccalaureus secundi Anni. Incipiat veterrimus, et ordine reliqui sequentur. Contra disputabit unus suo Ordine, cui scholae moderator adjunget quatuor aut plures pro suo arbitrio in singulis Disputationibus, qui Argumenta Respondenti objiciant. Qui cursum suum in Respondendo omiserit decem Solidis Mulctetur qui vero in opponendo cursum omiserit, tribus Solidis et quatuor Denariis."

## DE DECLAMATIONIBUS BACCALAUREORUM.

"Baccalaureorum Declamationes erunt Diebus Sabbati ab Hora octava ad nonam ante meridiem. Primo vero Hebdomada duo ordine Baccalaurei unum Thema tractabunt, cujus contrariam Partem duo alii dependent Hebdomada



sequenti sub Paena quinque Solidorum, si quis cursum suum omiserit."

#### AMERICAN LOVE FOR DISPUTATION.

Neither the Jesuits nor the English outclassed our ancestors in their devotion to this branch of education. The first school course of study in the new world, that at Harvard in 1642, called for disputation in each of the three classes twice every week, on Mondays and Tuesdays. We tracked right after our English forefathers in laying stress upon this work. The freshmen had also to give these public exercises every year while the sophisters had to be present twice a week. The bachelors had to appear in public once every fortnight under the eye of the president, besides having regularly, with the sophisters, to write out an analysis of some branch of sacred literature. Mather in his *Magnalia*,<sup>308</sup> gives the formula for investing the privilege of disputing upon the pupils: "Admitto te ad primum gradum in Artibus, scilicet, ad respondendum questioni, pro more academiarum in Anglia," or "I admit you to the first degree in arts, that is to say, to the privilege of responding in debate, according to the custom of the English universities." There was a similar formula for the master's degree. Mather was a pugnacious fellow, even in philology. He knew the exercise was really a fight and he got "bachelor" from "batualius," a term that carries the idea of beating or battling. Most likely this derivation is fanciful but it is all the more significant of the enthusiasm for this educational encounter.<sup>309</sup>

There was no decline, either, in the affection for this form of training. The Harvard course, nearly a century afterwards, in 1728, demanded two disputes a week from each

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<sup>308</sup> Hartford edition of 1853, Vol. 2, page 13.

<sup>309</sup> Neither the Oxford nor the Century Dictionary refers to this theory.

of the first three classes, and one from the seniors.<sup>310</sup> On towards the middle of that century disputation was required as a part of the entrance examination to Harvard as we are told by one of the students that in 1742 the president gave out the two following themes:

Sapientia praestat viribus.

Labor improbus omnia vincit<sup>311</sup>

On beyond the middle of that hundred years, the graduating class were required to dispute in Latin under the supervision of the President who also corrected them in that tongue. They conducted the exercises in the form of syllogisms.<sup>312</sup>

Yale of course was not behind Harvard along this line. Her earliest laws stipulated for disputations, bachelors once weekly, undergraduates five times, after they had begun to learn logic. A score of years later the general body of students had to go through this contest every Friday some half dozen at a time in Latin, Greek or Hebrew, while the senior classes did the same twice a week.<sup>313</sup>

That other early institution in our colonies, William and Mary, most naturally had the same exercises with the same formalities, coming from the same English source. The early statutes provided that the president and professors "diligently attend their lectures and disputations."<sup>314</sup>

#### KECKERMAN'S RULES.

We have seen specimens of the subjects discussed, we have noted the emphasis laid upon the matter, but it was left to a very solemn stick, Bartholomew Keckerman, to

<sup>310</sup> Quincy's *Harvard*, Vol. 1, page 441.

<sup>311</sup> Peirce's *Harvard*, page 238, quoting from Holyoke's manuscript diary.

<sup>312</sup> Peirce's *Harvard*, page 308, quoting from Judge W. Paine who was at Harvard 1755 to 1759, but wrote his recollections in 1831.

<sup>313</sup> Kingsley's *Yale*, Vol. 2, page 497.

<sup>314</sup> *History of William and Mary*, 1817, Philadelphia, page 52.

draw up the minutest regulations for the grave and ceremonious management of this subject. Keckerman was born at Dantzig in 1573 and was afterward engaged in some of the more eastern universities. He is a typical product of the times, prolix, pedantic, and frightfully methodic. He had a raging itch for outlines and schemes of classification. In the two volumes of his completed works there are nineteen folio pages of logic tables and sixty-two for philosophy. He was by instinct a sermonizer, curling his tongue deliciously up to 17thly and 33dly with a canebrake of main heads and subheads and minor divisions interspersed with long and short brackets. He is awfully tedious in his serious attempts to cover the whole realm of the known. Fortunately for subsequent students he died early, at the age of 36. If he had lived the allotted span of years his collected works would be equal to a Japanese novel of 200 volumes.

He devotes a whole chapter to disputation and a rather exact rendering of his Latin is here given. It is perhaps, certainly so far as this investigation disclosed, the completest treatment of the subject in existence, it is also worth all the type it requires as a snap shot picture of the medieval education, its drudgery, its worship of authority, and consequently its slavishness and weakness of individuality.

Chapter seven of volume I of his work contains what he has to say on disputation formally though there are many other side lights in other places especially in his logic. In English we have him thus:

## CHAPTER 7.

### ON DISPUTATION.

I. We have divided the treatment of connected topics into individual and social. But since we have thus far finished the treatment of all problems theoretical as well as practical, therefore our path leads us to the social which is likewise more theoretical or more practical. The more theoretical, by a special term is called Disputation; the more practical is indeed called Conference.

II. Disputation, therefore is that sort of treatment of a problem or connected matter in which two adversaries contend with each other so that the one as opponent, the other as respondent join battle.

III. The general principles of disputation are:

1. Disputation is not only a logical act but also an ethical one, even a theological and political one, if there is indeed argument on these things.
2. Hence, for properly carrying on a disputation there is needed not only logical but ethical and political virtue, even sacred and theological spirit and to that extent disputation should follow not only the logical rules but the political and ethical ones of affability and moderation, and certainly those of Christian piety and custom.
3. Since disputation is a logical act, all depends on the individual treatment of questions, or arguments, and hence it is the duty of those trying to dispute happily to be trained beforehand in the individual handling of connected questions.

IV. Certainly about disputation are two things to be considered: (1) its principle or object; (2) its parts.

V. Its principle or object is the matter of the dispute.

## VI. On this are these rules:

1. Above all, a certain question must be stated on which you wish to dispute, since any act whatever is limited by a fixed point if it is to be legitimate.
2. If the disputation depends on the exposition of simple matters even then the aim should be stated but there should be no argument on those questions which are inexplicable.
3. Here is the scope of disputation: (1) enquiry for truth, (2) illustration and confirmation of truth. Therefore not all questions are to be disputed, and not all questions to the same degree, and not at all those that men accept from natural instincts and prompting.

For example there should be no dispute as to whether there is a God, whether the whole is greater than the part, whether parents are to be honored, because these are principles whose truth is born with man, so that there is no need of enquiry, just as Aristotle rightly says in his second Topic that those men who argue such things are not worthy of consideration but of punishment.

4. Disputation as we have said is not only a logical act but also ethical, political; and frequently a divine or theological one. Therefore the object or material of disputation ought not to war against good manners or public peace, or piety and likewise we should not deal with scandalous matters.

VII. So much on the subject of disputation: here follow the sides which are either opponents or respondents.

## VIII. On the side of opponents are these general rules:

1. The opponent first attends to the scope or object, namely the proposition which he wishes to oppose.
2. The exact question having been stated, he forecasts the evident proposition bearing on that question, cer-

tainly the subject as well as the predicate according to the rules laid down above for the treatment of a question, so that he can see without doubt whether the propositions are perfect or imperfect, and how far he must explain.

3. The simple propositions having thus been cleared away, he has to come to the arguments confuting the position of the respondent which, must indeed be thought over in the same way, as we taught about the individual treatment of a problem.
4. Therefore he will separate the necessary arguments from the probable ones, and cling the more to the necessary ones.
5. He will argue partly from the nature of things inherent in the question, partly from the sentiment and opinion of his adversary so as by syllogism to upset those propositions which although not true in themselves still are true in the opinion of his adversary.
6. In case he reaches out to the artificial arguments, or testimony, effort is to be made first of all to press the adversary with his own admissions and to show contradiction in his own sentiments and thus far to contradict himself with himself either elsewhere or even now in this exercise of disputation.
7. In case he reaches out to the syllogistic style, to summon that double method in disputing, (1) the direct, (2) the indirect or that which leads to the impossible, and he will employ even that most effective plan, which is named from opposites, by which indeed opposite is brought against opposite.
8. Let the opponent think carefully and for a time before ponder whether the adversary is going to defend his thesis unreservedly or merely relatively and with certain limitations, also let him ponder what limitations

and distinctions he is going to use. Thus he will be able the more readily to offer attacks on the adversary's position or if the adversary responds not by drawing boundaries but by denying, then the opponent is prepared for the proofs.

9. But if the adversary shuffles, and is not willing to answer directly either for the conclusion or for the premises, and even wants to evade the question, and to draw off the opponent from the purpose or to reply, as we say, through certain generalities, and even if the opponent has such adversary before him, whom he suspects about to do that, let him write his arguments as far as meaning of the word goes, and require the same of the adversary, and even himself write his rejoinder either to this or to the conclusion of the adversary's syllogism. For thus the adversary will be the more easily cornered.
10. Because indeed disputation is a truth sifter. No one sifts rightly who shakes the sifter only once, and who does not whirl the sifter several times. For this reason rarely is a disputation carried out fully with profit and credit if only one objection is made by the opponent and that is not pressed with great force.
11. It is better to bring forward the fewest objections and to urge the same fitly and forcibly than to utter many objections and to press none—a policy logical students trained in disputation particularly follow. Many when they are going to dispute publicly or privately labor the hardest to think up the most arguments and they often iterate "I propose another argument." But I do not approve that custom in all cases, except perhaps with a tyro who has never exercised himself in debate. With such many things are excused, since disputation is a severe effort which de-

mands the great exercise of mind, and an unusual readiness of speech.

12. In order that you may be able to press upon and urge successfully first of all think whether or not the adversary has given a solution, whether he has really responded or apparently at least. But how many and what are true solutions and what are only apparent that is to be sought in the system of logic.
13. But it is a matter of ambiguity whether one has really answered when he claims he has. (1) It is a point whether the response of itself was directed to one of the three propositions of your syllogism either as to the form or the substance. (2) Whether there is surely pointed out a certain sort of fallacy committed in your syllogism. Wherefore since the adversary's response bears neither on the form nor the substance, and if he is not able to point out any fallacy in your syllogism, then you will certainly declare he has answered nothing, and has chattered much, and you will not be anxious for a solution or answer, but you will always urge this that he shall first respond, nor will you allow yourself to be led aside even though he asserts a hundred times that he has responded. Finally if he persists in chattering you will claim him for victim, and call for a decision because he has assuredly spoken much and said nothing.
14. If a fallacy should be pointed out in your syllogism, carefully consider whether it is in the form or substance. If the fallacy is in the form, then that syllogistic canon said to be broken should be examined. If the particular canon cannot be named, you will persevere in that purpose because the syllogistic form is good, and an assault on the form is in vain.
15. If the explanation and response rest on the substance,



think carefully whether on the conclusion or the premises.

16. If the response bears on the conclusion, it will either be an instance of missing the point (*ignoratio elenchi*) or of many questions taken for one.
17. But if it is said to be a missing of the point (*ignoratio elenchi*), search the canon of the legitimate opposition that your conclusion violates.
18. But if he says there are more questions, order that plurality to be shown to you, and even those diverse questions which certainly are not subordinate but discrepant and separate, because if he is not able to show those, no answer is made.
19. If he attacks the premises, he will attack either the words or the matter of the premises. If he attacks the words, he will attack either the simple or composite ones or the phrases.
20. If he attacks the simple vocabulary and asserts that it has many meanings, and even desires to expound them, you will reply that you accept the most common usage. But if he alleges certain meanings hatched in his brain demand of him the localities of those authors with whom he thus sets aside a vocabulary as he said he did.
21. But if he attacks the phrases and brings forward his interpretation, examine that interpretation according to the canons taught in the second part of logic on the interpretation of obscure propositions.
22. But if he does not attack the words but the thought, he will attack either by denying or by exacting the reason of the result or by limiting.
23. If he attacks by denying, he will deny either the manifest matters or the less manifest. If he denies the manifest his reason is to be demanded, why he denies so manifest a proposition, by declaring: "you ought

to have a weighty reason for denying that which is so plain to others," therefore let us hear that reason. Because if he cannot adduce a reason, he is to be plied with arguments leading him to an absurdity. This pertains to what Aristotle says: It is allowable to require from an adversary the reason why he answers thus or thus, because I am the strongest about that answer in which the very manifest things are denied for then it is proper to ask the cause why so clear a thing is denied.

24. But if the adversary denies those things which are not manifest and which need proof, then he can be harassed in no other way than by proving that premise which is denied by him. Thus you ought always to be quick and prepared for proof or for making syllogisms, major or minor; especially the minor which are besides more often denied, because the major very often is a general axiom, but the minor is a more special proposition. But specials are more obnoxious to proofs than universals.
25. If the adversary answers by a denial of the conclusion in the major, immediately give the reason for the result itself, and order him at once to take an exception to that if he has any.
26. If, indeed, he answers by the argument from limitation, you shall know that repulse of such an answer is difficult, especially if you are not well versed in logic.
27. Whoever is well versed in logic has three methods by which he can repulse the limitation argument. First Method: Consider what the adversary wishes to confine to the subject by limitation, and whether, I say, he does not imply contradiction with the subject. For if he does, you will say at once: "Contradictions by no limitation can be reconciled with the subjects that

they contradict." This rule have well commended to yourself in disputation.

28. Second Method: examine the limitations for the species of limitation taught in the second part of logic.
29. Third Method: say to the adversary if the limitation is very intricate: "Show me some absurdity," which should follow if the proposition is not thus limited in proportion as you fix the bounds. If he can show no absurdity, then the argument will be cast aside.
30. There is another response which is customarily given by denying doubtless the universality of the major to which answer a repulse is to be given as a postulate, namely, that in answering you he gives an inappropriate example for destroying the universality of the major. But if he is able to give no example or exception, he is conquered.

IX. Thus far on the duty of the opponent as well in defending as attacking. Now follows the duty of the respondent either inferior or superior who is chief.

X. The inferior respondent is properly the respondent, therefore, the special parts of the response are contained in his duty, and comprehended in these canons:

1. Let the respondent first run over the argument of the opponent either in a loud voice or quietly, usually in a loud voice, for three reasons: (1) on account of the opponent himself lest he protest afterwards that he did not advance such argument. For when many hear their arguments attacked and destroyed with ease, they feel ashamed and declare they did not advance such argument. (2) He should do this on account of the hearers in order to arouse them by this repetition to a solution to be grasped by closer attention. (3) Finally he should do this on account of the respondent himself in order to get some delay and space for proffering a more accurate answer.

This leisure is given to him when he repeats the argument of the opponent.

2. This was indeed the first duty of the respondent. Another duty is to answer the arguments enumerated, and here first of all he should deliberate whether the argument militates against himself, or against the adversary himself. If it does not lie against himself, he should frankly concede it all.
3. Finally he should pay regard to the syllogistic form, and if it is not good, he should point out the canon violated.
4. The form considered and granted, let him turn to the conclusion and bear in mind these three: (1) whether the status of the debate is correctly fixed by the opponent. (2) Whether the opponent fairly opposed his conclusion to the thesis which the respondent defends. (3) Finally whether the opponent has mixed several questions and disputes into one.
5. When he has ended with the conclusion then the mind of the respondent will turn to the major proposition and he will consider it in this order: (1) Whether it is simple or compound, and if composite, whether it has a certain reason for the result or even exacts a reason for the result from the opponent. (2) If it is a simple proposition he will consider whether true or false, will answer by denial, demanding proof. (3) If it is a true proposition, he will consider whether universal or particular, and if particular, he will reject with a given defence. Finally, (4) he will consider whether it is true absolutely or only relatively. If it is true relatively then he will limit it, for often there are many limitations with regard to the major premise, but few with the minor. Therefore, the most strength of the response hangs on the major.
6. In the next place the minor proposition will be ex-

amined to which, we said, response is to be made rarely by limitation, oftener by denial.

7. If the opponent argues unfairly from testimony, then the respondent has these three resources: (1) to consider whether the evidence is necessary or contingent. (2) He will weigh the words of the evidence and, if perchance they are obscure, he will be guided by the rules already laid down. (3) If the evidence is contingent and personal (bears on man) let him reconcile it with his own view as far as possible, but if he cannot do so, let him impinge the authority of the testimony brought up by the evidence of even great authority.
8. To the direct response, as the retort is made on the adversary, he will add the indirect and similar matters which are taught in the portion treating of the solution of fallacies in systematic logic.

XI. Thus much on the duty of the lower respondent who is properly called Respondent. Of the superior respondent or chief, are canons thus:

1. There are three duties of the chief: (1) directing, (2) succoring, (3) increasing and augmenting.
2. In his duty of managing, if the opponent breaks the laws of opposition, or if the respondent sins against the rule of disputation, the chief will warn the one of his duty and will hold the other within metes and bounds.
3. In his duty of assisting, if perhaps the respondent is lacking in response, the chief will himself give answer.
4. Finally in his duty of increasing and augmenting, if the respondent does not answer with sufficient fulness, he will add matter, or if the respondent is obscure or involved, he will make plain.

## AMERICAN DISPUTES.

Of course these tiresome and complicated regulations were not adopted in full in American schools, or at least there is no evidence of such, but the spirit of them must have been retained in the collegiate centers. Copies of Keckerman's book are still to be found in the eastern part of the United States and his logic was a textbook at Yale for a time. It was under their influence that the youth in this new land of freedom developed their debating powers, and their hair splitting faculties upon a multitude of questions for nearly a century and a half. There is no full file even of those questions formally handled but specimens have been preserved amply sufficient to revive the flavor of those days for us. As in other departments of this study we find the most data in connection with Harvard. A number of the questions were repeated literally from year to year, again others were varied slightly in their terms. A quarter of a century ago Professor E. J. Young classified a number of the themes for the master's degree from 1655 to 1791, and translated the Latin into English.<sup>315</sup> The questions begin with almost the earliest records that we have of Harvard University in 1642 and 1643 of which the following half a dozen are a fair sample :

1. *Linguarum scientia est utilissima.*
2. *Hebraea est linguarum mater.*
3. *Lingua Bracca est ad accentus pronuntianda.*
4. *Linguae prius discendae, quam artes.*
5. *Literae diversae sonum habent diversum.*
6. *Synthesis est naturalis Syntaxis.*

The following list is culled from the long series that Professor Young prepared, adopting his classification :

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<sup>315</sup> *Proceedings of the Massachusetts Historical Society*, June, 1880, Vol. 18, pages 119-151.

*On Society and the State.*

Is a monarchical government the best?

Are the Americans Israelites?

Does a college education incapacitate a man for commercial life?

Is agriculture unbecoming a gentleman?

Are polished manners an ornament to a man?

Is the voice of the people the voice of God?

Does civil government originate from compact?

Is it lawful to resist the supreme magistrate, if the commonwealth cannot otherwise be preserved? (Sam. Adams, 1743.)

Is civil government absolutely necessary for men? (John Adams, 1758.)

Is commerce in a republic worthy of the attention of the aristocracy? (1784.)

*Philosophy.*

✓ Did primitive matter have form?

✓ Is the act of creation eternal?

Does *genus* exist outside of the intellect?

Is there a *summum malum*?

Is the spirit of man distinct from his soul?

*Science.*

Is the starry heaven made of fire? (1674.)

Does a shadow move?

Were comets created in the beginning?

Can metals be changed into one another alternately?

Is the earth the centre of the universe?

✓ Was there a rainbow before the deluge?

Did the reptiles of America originate from those preserved by Noah?

✓ Were the aborigines of America descended from Abraham?

*Medicine, Physiology.*

Is there a circulation of the blood (An motus sanguinis circularis)? (1660, 1699; Harvey's announcement was made in 1628.)

Is there a universal remedy?

Does the heart make blood? (1710.)

~ Ought physicians to pray for the health of the people?

Is a temperate life the best medicine?

Is the color of the Indians the original color of man?

Did Adam have an umbilical cord? (1765.)

Can the whooping cough affect a human body twice?

*Law.*

~ Can an atheist appear in court?

Is extortion becoming a lawyer?

~ If Lazarus, by a will made before his death, had given away his property could he have legally claimed it after his resurrection.

*Ethics.*

Are duels lawful? (1690.)

Is it lawful to take any interest for the use of money?

Is it lawful to sell Africans? (1724).

~ Is matrimony necessary to the safety of the State?

Is it lawful to subject Africans to perpetual bondage? (1761.)

~ Does dancing produce softness and urbanity of manners?

*Theology in General.*

Are the Hebrew points of divine origin?

~ When Balaam's ass spoke, was there any change in its organs?

Was the star which appeared at the birth of Christ a comet?

\* Does music promote salvation?



Should the deaf be required to worship God in the churches?

Does the devil know the thoughts of men?

Was sin in the world before the fall of Adam?

Will a comet be the cause of the world's final conflagration?

Does the falling of rain prove a providence?

Is there a paradise distinct from heaven?

Are disputes relating to theology generally injurious to religion?

Is polite literature an ornament to a theologian?

Should the children of unbelievers be baptized?

A few may be added to these gathered from other sources as follows:<sup>316</sup>

Rhetorica est ars ornata.

Mathematica est disciplina circa mensurabilia et numerabilia.

Triangulum in plano est rectilineum in sphaera circulare.

Physica est naturae ejusque legum explicatio.

Sensus externus est unicus.

Bruta non agunt mechanice.

Aeris pressura est suctionis causa.

From another source<sup>317</sup> we gather these:

Religio naturalis non est sufficiens ad salutem.

Bona opera sunt necessaria ad salutem.

Anima rationalis est substantia spiritualis incorporea.

Consolatio divina est necessaria ad salutem.

Of different form although under the same name, are the disputations of Ezekiel Cheever, really more of a student's note book on his lectures than of formal discussions.<sup>318</sup> His

<sup>316</sup> From a large folio volume in Harvard Archives entitled "Theses from 1687 to 1810."

<sup>317</sup> Wadsworth's *Diary*, in Harvard Archives.

<sup>318</sup> In manuscript, 414 pages with a few lost, in the Library of the Mass. Hist. Soc.

deserve room here on account of his eminence as a school teacher, besides opening slits in the wall of the past upon the educational machine of the time, especially supplementary are all the selections from this volume upon the science instruction. A few specimens are taken here while the explanation of some of the notions will come later on.

An idem sit finis et bonum et num omnia agunt praeter finem.

Num detur finis simpliciter ultimus et unicus.

Quomodo causae secundae intendant finem ultimum.

Solvuntur nonnullae objectiones.

De naturali hominis felicitate.

Quid sit voluntarium et quantuplex.

An quae fiunt ex motu ira et concupiscentia sint voluntaria.

De ordine et numero passionum.

De passionibus simplicibus.

De consultatione et deliberatione.

De natura et composito substrati.

De infinito.

De loco et vacuo.

In physicam specialem de generatione et alteratione.

De anima sensitiva.

#### SOME EXAMPLES FROM YALE.

While the examples for Yale are not so comprehensive or chronological from the beginning as those from Harvard there is the same general discipline and in many instances the identical questions. We have the same puzzle about the descendants of Adam or as expressed in Latin, omnes gentes ab Adamo descenderunt. Later there is another Adamic problem to be solved, "whether Adam knew that eternal damnation would be his doom if he ate of the for-

bidden fruit."<sup>319</sup> Adam must have been roundly hated by college youth in those days.

There is a very familiar question, still mouthed over very vigorously by boys to-day, left us by Jeremiah Mason, who took the negative of it at his graduation in 1788, "whether capital punishment in any case is lawful."<sup>320</sup> In after years, as with many a man in his college reminiscences, Mason became very frank and genial on some of his experiences. With a slight glow of pardonable pride Mason confesses that he got up his arguments, which made quite a hit, from Beccaria's Treatise, which, happily for Mason, was very little known at the time. And no doubt it was all attributed to his originality when his performance was praised as the best of the day.

However, it is to Stiles that we are largely indebted for samples of Yale forensics. It is true they occurred after our colonial days had ended by the action of 1776, but as it is indubitable that many of them reached back for perhaps half of a whole century they serve as a mirror almost as distinctly as if they had been recorded fifty years earlier. Stiles was the president of Yale and a warm defender of disputations, generally presiding at the exercises. The following have been gathered from his indispensable diary, the volume and page being given usually:

1. "Diluvium Noachi fuit universale." }<sup>2—277.</sup>
2. "earning increaseth happiness?" }
3. "Whether a toleration of all religions is beneficial to the State?" 2—287.
4. "An bellum est licitum." }
5. "Are there any innate ideas?" }<sup>2—306.</sup>

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<sup>319</sup> Kingley's *Yale*, Vol. 1, page 444, basing on the Diary of Baldwin, who discussed this question at Yale as a junior in 1762.

<sup>320</sup> Stile's *Diary*, Vol. 3, page 328, or Mason's autobiography, page 12.

6. "Whether the Scriptures are of divine inspiration?"  
2—314.
7. "Whether the same body shall rise in the resurrection?" 2—315.
8. "An Diluvium Noachi fuit universale?" 2—315.
9. "Differentia inter Bonum et malum morale est aeterna et immutabilis." 2—328.
10. "Nullae dantur ideae innatae." 2—348.
11. "Whether a private was to be preferred to a public education?" 2—348.
12. "Whether all religions ought to be tolerated?" 3—255.
13. "Whether there are any innate ideas?" 3—97.
14. "Whether the planets are inhabited?" 3—98.
15. "Whether a public be preferable to a private education?" 3—99.
16. "Whether the change of the Sabbath from the last to the first day of the week be jure divino?" 3—101.
17. "Whether the witch of Endor really raised Samuel?" 3—101.
18. "Whether the present passion for college education is for the advantage of this State?" 3—102.
19. "Whether Congress ought to have more power and authority?" 3—102.
20. "Whether the will has a self-determining power?" 3—103.
21. "Whether the flood universal?" 3—112.
22. Whether different climates be the principal cause of the different geniuses of mankind?" 3—112.
23. "Whether a representative ought to be bound by the instructions of his constituents?" 3—115.
24. "Whether the institution of the Cincinnati will prove detrimental to the public?" 3—118.
25. "Whether confiscation right?" 3—118.
26. "Whether literature or the military art be most subservient to the public welfare?" 3—119.

27. From this on, are others on, whether best to have state religion: lower house too large in legislature: immersion: on suicides sane or not: revelation be proved by miracles: to obey another in state of nature: whether Republic be preferable to monarchy. 3—142.
28. "Whether planets are inhabited?" 3—144.
29. "Whether light is invisible?" 3—144.
30. "Whether reading *Novelles* is beneficial?" 3—149.
31. "Polygamia non est licita." 3—151.
32. "Whether the Latin and Greek languages are studied too much in America?" 3—152.
33. "If hole made through earth, air exhausted, would a body dropped in it oscillate from side to side forever or finally come to stop at center?" 3—157.
34. "Whether laws prohibiting emigration are for the general interest of nations?" 3—198.
35. "Whether distilled spirituous liquors have been of more service or injury to mankind?" 3—209.
36. Private or public education again. 3—210.
37. "Whether independence better for U. S. than to remain with England: Whether to borrow money to subsidize algerines?" 3—203.
38. "Comparison of ancient and modern learning?" 3—213.

## SOME BURLESQUES.

A cartoon nearly always deals with the crux of an affair. It seizes upon and emphasises a prominent feature. It means that the attention is attracted to that particular thing. Youth is the era of exaggeration and it is some unusual trait of a teacher's character or some striking element in his education that he delights to seize upon and magnify. It is the instructor with some marked individuality, some strength of temperament, some accomplishment of power, that gets

the "knocks" on class nights. It is the new or the unusual or the leading portion of the curriculum that is caricatured. It is something that hits the imagination or arouses the attention that he loves to take off—the strongest testimony to its importance and the impression that it makes at the time.

It is just such testimony that has come down to us from one of the early years at Harvard, 1663, when an elaborate program of disputations was got up in this spirit of fun by some of the students.<sup>321</sup> It is perhaps the only humorous product of the sort that has weathered the warfare of time. There are some admirable keen little touches of satire. He was smothered in religion, he was covered with the moss of medievalism, but the colonial boy had the same youthful toughness of fibre within that fortunately the boy still has. He saw through the solemn mist and he winked roguishly at some of the grave shams. Here is a handful of his barbs:

*Technological—*

The precepts of art know neither rising nor setting.

Nature is the nurse of art; art is the handmaid of nature.

*Logical—*

Logic, with respect to the perception of ideas, is the optic nerve.

Substance is the caravansary of accidents.

Related things are contemporary twins.

The subject is the porter of attributes.

The syllogism is a triangle of which the vase is the conclusion.

Sophistry is the display of arguments for sale.

*Rhetorical—*

Rhetoric is the clothing in purple of reason and oratory.

Monotony is rhetoric without the muse.

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<sup>321</sup> Edes Vol. 5, *Transactions of Colonial Society of Mass.*, pages 322-339.

*Mathematical—*

Ciphers give what they have not.  
The geometer is an angular wretch.  
The planets are the fixed stars; fixed stars are paralytics.  
Time is the offspring of celestial motion.

*Ethical—*

Ethics is a corrosive plaster for vices.  
Virtue knows neither latitude nor declination.  
Granted a good temperament of body, virtue follows, and vice versa.

*Grammatical—*

Grammar is the door of language and the primary school of philosophers.  
Etymology is the analytical fracture of words.  
Ha Ha He is a well-known expression of hilarity.  
Poetic license is grammatical heresy.

*Physical—*

The student of natural science is the ripper up of natural bodies and of nature.  
Primal matter was fermented from quantity.  
Every form will not join in matrimony with every material.

CIVIC CULTURE.

There is a rather leaping vein of vigorous young blood to be traced among these questions. There are the freshness and independence of sterling manhood that might have opened the dull eyes of English ministers if they had scanned these lists. They are the raw winds of a coming storm. Disputation was a silly quibbling in most cases, a chewing of old chips of definition in many instances, but it bred skepticism, it cultivated criticism, it loosened the hoary

bands of conservatism. The two Adamses, Samuel and John, were beardless forerunners of the upheaval. A whole generation before the thunder clap startled the sedate aristocracy across the water, Samuel Adams was seizing upon the very vitals of the relations between the mother and her colonies. At his graduation he was questioning the right of revolt against the statutes of government, as to be noted in his question above.<sup>322</sup> His kinsman, John Adams, perhaps not so radical but more philosophical and comprehensive, was also dealing with the subject of human control. We don't know what they said, much raking over the dead leaves of the past has failed to bring to light their words, but we know the general lines of their thought and we see the first faint bubbles simmering towards the top.

#### ACTUAL DISPUTATIONS.

There are, however, copies of these boyish efforts, very stilted and unnatural, but all the better for that reason because we can rely upon their genuineness as they have come down to us unedited by the school teacher.

#### MILTON.

Milton, who wrote the greatest ethic in the English language, at least everyone says so, and almost no one reads it. has left us several of his productions, which have been described as "stately," though really very tiresome and tedious. One of these, condensed below, is an equitable index to all of them.<sup>323</sup>

He took the side of day on the proposition "Whether day or night is the more excellent?" After a long, labored exordium he asserts that day is better because (1) of more honorable parentage; (2) of the greater respect of an-

<sup>322</sup> See Everett's *Orations*, Vol. 2, page 177, giving such depth to Adams.

<sup>323</sup> Masson's *Milton*, Vol. 1, pages 242-246.



tiquity; (3) of higher utility for human uses. Under the first two he goes into Greek mythology. "How pleasant and desirable day is to the race of all living things"—"the birds cannot conceal their joy" in "sweetest songs;" they "fly as near as they can to the sun;" "the sleepless cock trumpets the approaching sun." "The kids skip also in the fields and the whole world of quadrupeds leaps and exults with joy." "The marigold also and the rose \* \* \* opening their bosoms breathe forth their odors \* \* \* which they disdain to impart to the night." "The other flowers raising their heads a little drooping and languid with dew offer themselves, as it were, to the sun and silently ask him to wipe away with kisses those little tears which they had given to his absence." "The earth too clothes herself for the Sun's approach with her comelier vestment." There is no wonder in this because Day is alone "suited for the encountering of business. Who would cross broad seas if he despaired of the advent of day. Men would shut themselves up and human society would be straightway dissolved." Poets say justly that "night takes its rise from hell." In the night "all things grow sordid and obscure." Everything, man and beast, at night hastes to its house or cave and "shuts its eyes to the terrible aspect of night." None go out save "robbers and light—shunning rascals, who, breathing murder and rapine, plot against the goods of the citizens and wander only at night. \* \* \* Day searches out all criminality," but at night you "will meet nothing but goblins and phantoms and witches which night brings with her as her companions from the subterranean regions." "Who, then, unless he were a son of darkness, a burglar, or a gambler, or unless he were accustomed to spend the whole night in debauchery and to snore through entire days, would have undertaken the defence of so dishonorable and so invidious a cause as that of night? You therefore, my hearers, since night is

nothing else than the decline and as it were death of the Day, do not allow death to be preferred to life."

#### JOHN CLEVELAND'S ARGUMENTS.

To another English poet, John Cleveland, of whom Milton's nephew was jealous lest the fame of *Paradise Lost* be overshadowed, the good or bad luck has come of having his youthful effusions projected into the keeping of posterity. We do not know the title of the one transferred here as a symbol of all the others, but the tone of it fixes it as one side of the battle as he himself calls it. There is scarcely anything to it, except verbosity and swelling sounds, but what better evidence could we want for the hollowness of so much of education then. Both the Latin and English dress are displayed.<sup>324</sup>

Quos ne videre possum citra oculorum hyperbolem, quomodo vos compellarem? Etcum altissimus vester gradus sine scala occupari nequeat, quaenam Orationis climax vestram scandet dignitatem; vestram dum suspicio in meo vultu invenio purpuram; et ingentis curae quae praetandae observantiae me habet sollicitum, non novi subtilius argumentem puam stuporem. Quod autem poetarum Princeps Deorum Senatum cogit ad suam *Batrachomyomachiam*, pari audacia liceat et mihi vos ad ludicrum hos certamen nostrum invitare. Umbra est haec nostra contentio et Icon belli. Murium et Ranarum pugna, quid aliud quam *Iliadis Brachygraphia*? Et in Pusillis istis Animalibus Hector et Achilles (tanquam *Iliades* in Nuce) coarctantur. Ea siquidem est pensi nostra conditio; ut hic etiam Mars et Venus implicari jacent. Pugna est, sed ludicra; Ludus et tamen bellicus; ita ut nec bis cincta placeat *Philosophia*, nec nuda *lythearea*. Qui virilli toga indutus, nec dum relinquit nuce, sed totus (?)

<sup>324</sup> Oratio in scholiis Publicis habita cum junior Baccalaureus in Tripodem disputaret, Cantab., is the title of his speech, on page 132 of Works.

jocos crepat, hujus ego Palladem posthumam cerebri sui prolem existimabo. Qui in hisce Floralibus solus Cato, et inter Philosophiae flores, hujus Minerva (ad Amazonis instar) alterâ Mammâ destituitur. Ille demum sit noster miles, qui et sese praestet ingenii Velitem, et Philosophiae Cataphractum; qui et viriliter audet disputare, et pueriliter cum Bipode Tripode par impar ludere. Me quod spectat ita rationem ad agendam subdixi meam, ut utrinque munus moliar et subterfugiam, et pudibunda metum inter et officium Musa, et fugit ad salices, et videri cupit.

English for above:

“Speech delivered in the Public Schools (University, not the college) when as junior bachelor he disputed in the tripod.

“How shall I address you whom I am not able to see within the sweep of my eyes? And when your highest grade cannot be occupied without a ladder. What climax of oratory will measure your dignity? While I look up I find your purple in my face: and I am not more plainly acquainted with the signs than with the stolidity of the great solicitude which makes me apprehensive of the reverence to be warranted. But since the Prince of poets condensed the Senate of the Gods into his battle of the frogs and mice, it is allowable for me to invite you to this game, our contest. The shadow and image of war is this our contention. The battle of mice and frogs, what else is it than the Iliad in embryo? and into these petty animals are Hector and Achilles (as if the Iliad in nutshell) compressed. This, indeed is the limitation of our task, that here Mars and Venus lie entwined.

It is a fight, but a game. A play and yet warlike; so that thus neither double girdled philosophy is pleased, nor naked Cytherea. This one who, clothed in his manly toga, does not relinquish his rattles but cracks his jokes, I will account Pallas the offspring of his brain. Minerva is de-

frauded of another breast (by) this one who, a solitary Cato in these flowers, admits no buds of rhetoric among the thorns of whilosophy. In the end may he be our warrior who puts himself forward as the scout of the intellect and the mailed guardian of philosophy; who dares to dispute both boldly and to play at even-odd boyishly with the double footed tripod. Whatever tests me I have thus deliberated for guidance that on both sides I undertake duty and deception, and the Muse shameful between fear and obligation both flees to the willows and desires to be seen."

#### SOMETHING FROM CHEEVER.

Cheever's disputations, as has been said, are really notes taken of his lectures or textbooks but as they have the title of disputation they throw another light upon the vast scope of this exercise and the solemn importance attached to it in education. Here are a few specimens from him bearing chiefly on science and logic:

Summa capitis libri secundi physicorum.

Liber hic secundus constat 9 capitibus quae dividi possunt induas partes. Priore parte agitur de natura et discrimine inter philosophiam naturalem et mathematicam, posteriore parte agitur de causis.

#### SUMMA CAP I.

Quaedam sunt entia quae constant natura, qualia sunt plantae, elementa etc: alia sunt quae allis constant causis qualia sunt artefacta. Priora habent in se principium sui motus: posteriora minime. Definitur natura principium et causa motus et quietis illius in primo per se et non per accidens. Substantiae naturalis materia et forma constantes habent naturam. Secundum naturam sunt quae vulgo vocantur proprietates naturales. Denique dicitur naturam esse duplicem, materiam et formam: sed forma magis est natura quam est actus.

## SUMMA CAP. 2.

Physicus, geometra, astrologus, in iisdem versant magnitudinibus, solidis, punctis, figuris, sed diverso modo, physicus enim haec contemplatur quatenus sunt termini et affectiones corporis naturalis et quatenus sunt in materia. mathematicus autem abstrahit haec a materia. Physici est materiam et formam simul contemplare, quae cognitio utriusque pertinet ad eandem scientiam, et artem ut patet in medicina et architectura; haec enim non solum considerat materiam domus sed etiam formam, de arte dicitur quae naturam imitatur.

## SUMMA CAP. 3.

Quatuor sunt genera causarum. Materia et forma quae dicuntur causae internae: efficiens et finis quae dicuntur causae externae. materia est causa ex qua res sit eo pacto ut inquit, sic aes est materia statucae. forma dicitur ratio essentiae, sive id per quod res est id quod est. Efficiens est primum principium mutationis et quietis, ut agens naturale. Finis est id cuius gratia res est: sicut sanitas est finis deambulationis. Praeterea dicitur unius effectus plures esse causae per se, et causas sibi invicem esse causas: idem et idem potest esse causam contrariorum. Causa dividitur in proximam et remotam, in causam actualem et potentialem, in particularem et universalem. In causarum investigatione ad ultimam progredi oportet. Dein causae particulares effectuum particularium sunt reddendae: Denique effectuum universalium causae item universales sunt reddendae, et sic in caeteris.

## SUMMA CAP. 4, 5, 6.

Fortuna et casus (inquit) sunt causae multorum effectuum, licet negent quidam qui dicunt dari definitam causam omnium. sunt alii qui omnia fortunae subjiciunt immo et pisum caelum sed hi errant (inquit) quia animalia et plan-

tae certas causas suae generationis habent. Caelum vero eodem semper tenore et constantissime movetur. Praeterea (inquit) alii sunt qui faciunt fortunam deam sed hominibus incognitam. Non est inquit fortuna in iis quae per se, semper eodem modo fiunt, aut plerumque, sed in iis quae raro eveniunt sed per accidens, et praeter intentionem, est enim casus et fortuna in iis quae alicujus gratia fiunt sive ea fiunt consilio sive natura. Definit fortunam causam per accidens in iis quae per electionem alicujus gratia fiunt casus autem latius patet, nam quod est a fortuna, est etiam a casu, sed non contra casus. sit causa per accidens in iis quae alicujus gratia fiunt, Igitur si stricte sumatur casus in iis reperitur quae agunt sine consilio. Fortuna vero in humanis utraque haec causa inquit est referenda ab efficiente.

#### SUMMA CAP. 7.

Tot sunt genera causarum statuenda quot sunt quaestiones sed quaestiones sunt 4, ex quo et est materia; per quid, et est forma; a quo et est efficiens, cujus gratia, et est finis. Denique inquit physicum haec omnia perquirere; et proinde eum per omnia genera causarum demonstrari.

#### SUMMA CAP. 8.

Licet naturam agere praeter finem et proinde alicujus gratia unde non temere nec casu. Ratio est qua quae fiunt a natura eodem semper modo fiunt. Insuper dicit araneas, formicas et hirundines sine consilio et impetu naturae telas texere et nidos condere. Immo et stirpes folia emittere ad fructus tegendos, et radices deorsum agere non sursum. idque alimenti causa. quod e terra exsurgunt, ad haec materia inquit quae est natura tendit ad formam quae est ejus finis. est igitur natura alicujus gratia licet interdum suo fine frustretur ut in monstis, quae tamen non intendit producere neque enim monstra producit nisi sit impedita, et proinde monstra dicuntur peccata naturae. Dicit naturam

agere praeter finem licet non deliberet      Ars enim non  
deliberat saltem      agi tamen praeter finem.

## SUMMA CAP. 9.

Necessitas est duplex, absoluta quae est a materia sic absolute necessarium est serram esse duarum qua est ferra, hypothetica quae desumitur a fine et a forma supposita sic necesse est serram esse duram qua ad secundum est comparata. utraque necessitas reperitur in rebus physicalibus licet veteres solam absolutam ex materia amplexi fuerint: imo necessitas simpliciter in naturalibus non est ex materia sed ex suppositione, sive fine, quia forma quae est finis materiae et generationis est causa materiae, cum forma sit praeter materiam, non contra: unde finis et forma praecipue sunt considerationis in physica licet non sit neglegenda materia. Sed physicus et artifex omnes suas ducunt definitiones a forma et fini.

## ANOTHER HARVARD DISPUTATION.

Nearly a century after Cheever, in 1760, we have something of the same kind from a Harvard student, Perez Fobes,<sup>325</sup> preserved in a small oblong manuscript volume, in the original English, in the archives of his *alma mater*. One of them after a harrassing scrutiny is here given in full. He proceeds thus:

“Among the various Disputes that have been extant in the world this, viz., whether the earth moves around the sun or not, has been none of the least. That this our earth is immovable or at least moves not around the sun was the received established and unalterable opinion of our ancestors, sacred as well as profane; who for their excellency and strictness in Eusebia and piety, sanity of mind, invariableness in judgment, ingenuity in invention, reason-

<sup>325</sup> Perez Fobes, student of Harvard, 1759-60; small oblong, 6 in. by 3, open at end: about 30 pp.: both lids gone.

ableness in argument and quickness of thought, were so incomparable that their illustrious names will stand written with indellible characters in the annals of all succeeding posterities—But my present design is not to panegyryze on their excellent endowments, nor enter into a detail of the eulogical apophymys (apothegms) and excellencies, but to produce a few arguments in favor of their opinion or in defence of the earth's immovability, and I shall first answer to the unheard of (to all humane ears grating) absurdities that arises from the supposition of the earth's motion.

“1. If the earth be supposed to move around the sun the motion must absolutely be either *violenter vel naturalis* (violent or natural) and I see not how it can be natural unless you suppose this earth with all its various appendages and appurtenances to be but one single body which is no less dissonant to our sages than incompatible with reason, for to imagine that one natural motion agrees to complex bodies is not only the height of stupidity but it argues infatuation in the abstract.

“2. The earth's motion cannot be violent. For you that suppose the earth to move around the sun allow it to move with a perpetual unabated motion and therefore cannot be forced because forced motion cannot be perpetual.

3. If the earth moves I ask what the reason may be, why a cannon [ball] when cast 50 feet in air descends in same place from which it was ejected. Perhaps you will answer—tis the attraction which the atmosphere has upon bodies. Then I ask whether it is rational to suppose invisible vapour to have a power to attract bodies, and that too equal with the earth for whether body be great or small it falls in the same place (which supposition I think very absurd). And many more of the like nature I might produce but not opinating myself to be invested either with the power of enthusiasm or exorcism, therefore I am more



liable to falsify than they that were divinely inspired wherefore I shall now deduce some from those men [?]

“From that too much neglected and by our hair brained respondents slighted book, the Bible—and [in] that [that is, the Bible] a certain eastern writer (the laity call him David) whose writings are no less demonstrative of intricate enigmatical truth than he himself was inimitably exemplary in piety—speaking of the magnificent works of the Lord says, see Psalm, 104, 5: ‘Thou, O Lord hast laid the foundations of the earth that it should not be removed Forever, id est, moved again. Consonant to which are those words in Psalm III:7.8, ‘The works of God’s hands are verity [?] and judgment they shall stand fast forever and ever.’”

“Another excellent writer says: see Joshua 10, 13. The sun stood still and that in the midst of Heaven. Here perhaps our respondents may object and say [thus] that Joshua himself knew to the contrary but thinking it might be more easy and better adapted to the agricolated intellects of the vulgar to say the sun stood still than the earth, of these I would ask whether it is correspondant with reason to suppose a man who infallibly was actuated by the immediate power of inspiration should say one thing and at the same time intend another.

Shocking Thought! The Almighty prevaricate! Every hair in my head unavoidably assumes a power of perpendicular erection! When at the same time to suppose the earth to move (had that been his opinion) would, according to your own argumentation have been much more congruent to the capacities of the illiterate.

Secondly. Our ostentatious and as they think self abnegating respondents will undubtedly say that Joshua was unskilled in such abstruse sciences as astronomy and geology are. From those that thus imagine I may infer and that justly too that they measure the longitude of

Joshua's knowledge by the latitude of their own brains, or else you would not have the audacity or at least the stupidity to suppose that a gentleman who was perchance not only educated at the schools of the prophets and had for his inspector [instructor] and tutor no less a man than Moses but that he who was such a renowned Alexandrian warrior and perhaps had reiteratedly circumambulated all Asia and Africa and now that he should be ignorant of geometry and astronomy—such a thought almost obstructs respiration, my blood runs cold and had almost laid stagnated in my veins at such uncouth fanaticism—“And thus I have undeniably proved immobility of the earth and would now just give our numheaded respondents a timely caution and so conclude—that altho our assertion has been sufficiently proved even to a demonstration yet perhaps they will pique themselves with a vain, groundless conceit that our arguments are nihil ad rem, yet I hope the time will come when their now obscure intellectual faculties will be illuminated and they brought to see not only their egregious errors and exotic suppositions but also their (as they now think powerful arguments) utterly refuted and totally invalidated, your assertions have been no less daring than impertinent—

“Now I think it very preposterous that our inebriated bigoted and fascinated[?] respondents should prefer their own reason so much above inspired writing and apocalyptic truths, as wholly to embrace the former and entirely expunge the latter, and if it be now your real opinion, and notwithstanding the above absurdities that arise from such suppositions I would amicably desire you to not to communicate this your opinion to the commonalty lest instead of diminuting the camel to the bigness of a gnat you augeate the pismire and make a catemount. Its dangerous denying inspired truth.

“[Some illegible Greek letters]—and you undoubtedly

find that the greatest consolation that arises to those scriptures rejecting infidels will be the barbed stimulation and reluctant compunction of self condemning conscience here, and the inexorable vengeance of incensed omnipotence hereafter."

He has another question on: "Whether God at first created a great number of every kind of living animals or only two of each species, a male and female, from which all rest proceeded by generation?" Then follow arguments also in quotation: 1st by analogy of men the latter view obtains with many: but 2nd first view seems more conformable to scripture which speaks of fish as abundant (Gen. 1:20, 21).

#### THE MASTER SATIRIST.

Again we know what a monster disputation loomed up in the educational world since Rabelais, who lampooned the life of his day, devoted a special chapter or so to taking off this pedagogical craze which had swollen beyond the giant size in his day, before the middle of the sixteenth century, more than half a century before the Indians had been startled by the sight of the white man on the banks of the James. The animal was masterful in man in those days, passions were rude and unregulated. One of the world's monarchs of satire had to choose words strong and coarse, usually too broad and plain for young ladies of to-day, but they hit the mark. One of his chapters in book two of his complete works has a keen lash for the disputation about him. He makes his contest a silent one, carried on by absurd gestures in which the two competitors are wrought up to the highest pitch of excitement. Elsewhere he whips the custom as when he says through a character: "And as for disputation contentiously, I will not do it, for it is too base a thing, and therefore leave it to those sottish sophis-

ters, who in their disputes do not search for the truth, but for contradiction only and debate."

But still better is a sentence from an argument in court, as foolish, intricate and nonsensical almost as some of the above from that Harvard boy, as we have it in English:<sup>326</sup> "There passed betwixt the two tropics the sum of threepence towards the zenith, and a halfpenny; forasmuch as the Riphæan mountains had been that year oppressed with a great sterility of counterfeit gudgeons, and shews without substance, by means of the babbling tattle and fond fibs, seditiously raised between the gibble-gabblers and Accursian gibberish-mongers, for the rebellion of the Swissers, who had assembled themselves to the full number of the bumbees and myrmidons to go a handsel-getting on the first day of the new year, at that very time when they give brewis to the oxen, and deliver the key of the coals to the country-girls, for serving in of the oats to the dogs."

#### GRAVE CONTEMPORARY OPINION.

Rabelais had strong associates, matching his sarcasm with their deliberate condemnation. Vives was one of the clearest-headed and most out-spoken in showing the inherent viciousness of the exercise. It leads to no results he said, it is not mouthing but the silent observation of nature, investigation, careful questionings that advance knowledge.<sup>327</sup>

A witty chancellor of the University of Paris scraped off the gloss by a homely comparison.<sup>328</sup> "What," he said, "are the contests of our Savants if not real cock fights? One cock struts up to another and bristles his feathers. Our people do the same. They have not beaks and spurs like

<sup>326</sup> Book 2, chapter 11, Chatto and Windus edition.

<sup>327</sup> S. S. Laurie, page 42, *Rise of Universities*.

<sup>328</sup> Compayre's *Abelard*, page 190.

the cocks, but their self conceit is armed with a redoubtable ergot."<sup>329</sup>

#### PETRARCH'S VIEWS.

This eminent author of the 14th century, who has been described as "the first modern man," did not fail to notice the hollowness of these argumentative efforts. In a kind of raillery and contempt he calls our attention to the performances thus: "Look at these men who spend their whole life in altercations, sophistical subtleties, in incessantly turning their brains upside down in order to solve empty little questions; and accept as true my prophecy concerning their future: their reputation will pass away with their existence, and the same sepulchre will suffice to enshroud their names and their bones."<sup>329a</sup>

#### JOHN WEBSTER'S BITING WRATH.

At this as well as other branches of the educational tree, John Webster hewed and hacked with all of his soul. He looked upon this jarring discord of sounds of a *bellum intestinum*, or "a civil war of words, a verbal digladiation, contest, a combat of cunning craftiness, violence and altercation, wherein all verbal force by impudence, insolence, opposition, contradiction, derision, diversion, trifling, jeering, humming, hissing, brawling, quarreling, scolding, scandalizing, and the like, are equally allowed of, and accounted just, and no regard had to the truth, so that by any means they may get the conquest, and worst their adversary, and if they can intangle or catch one another in the spider webs of sophistical or fallacious argumentations, then their rejoicing and clamour is as great as if they had obtained some signal victory. And indeed it is the counsel of the

<sup>329</sup> This word, Compayre holds in foot note, page 190 is from *ergo*, though others holds from ergot (spurs).

<sup>329a</sup> Compayre's *Abelard*, page 213.

Arch-sophister Aristotle, their master, to speak ambiguously while they dispute, to obfuscate the light with darkness, lest the truth should shine forth, nay rather to spatter and blurt out anything that comes into the budget, rather than yield to our adversary." Aristotle advises "the respondent not to take the business grievously, but by putting those things which are not profitable to the proposition, to signify whatsoever doth not appear. \* \* \* Oh excellent and egregious advice of so profound and much-magnified a philosopher! Is this to be a lover of verity, or indeed to play the immodest sophister and caviller? \* \* \* Altercations and abjugations \* \* \* civillation." In syllogisms "conclusions beget but bare opinations, and putations, no infallible scene \* \* \* vaporous and airy sounds of words \* \* \* vain glory of syllogising sophistry \* \* \* they opionate their ignorance to be sapience \* \* \* we know nothing, yet notwithstanding we think we know all things." Even best logical systems leave "the intellect nude and unsatisfyed because it produces no certitude, nor evidential demonstration \* \* \* fills the mind full of opinions \* \* \* makes men parrot-like to babble, argue, and say very much, but still to remain nescious and ignorant, so vast is the difference betwixt putation and true knowledge."<sup>329b</sup>

#### THE PONDEROUS MILTON.

Milton's shafts were just as numerous and more penetrating as they came from a higher authority. Milton was one of the finest flowers of medieval education. When he spurned and ridiculed the teaching of his day he spoke from the chair of a master who had been the whole round in glittering success and could put his finger upon the delusion of it unerringly. He ransacked the arsenal of language for missiles to hurl upon the curriculum, which he thought a

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<sup>329b</sup> Webster's *Academiarum examen*, page 33.

pure trifling at grammar and sophistry. In disputation he declared boys mocked and deluded themselves with ragged notions and babblements while they expected worthy and delightful knowledge.<sup>880</sup>

#### A BATTERING RAM.

The educator, the poet, the critic, were all backed up in their attacks by the philosopher John Locke. Although a bachelor, an orphan at an early age, without the tender care of woman, without the sympathy of a child associate, he had the insight of a seer for the deep principles of education. A pregnant characterization he leaves us on "that maze of words and phrases \* \* \* little or no meaning \* \* \* without a progress in the real knowledge of things \* \* \* fill our heads with empty sounds which" no more "improve our understandings and strengthen our reason than the noise of a jack will fill our bellies or strengthen our bodies."

To parents he says if you want your boy to have "right notions \* \* \* right judgement," to distinguish between "truth and falsehood, right and wrong \* \* \* act accordingly \* \* \* be sure not to let your son be bred up in the art and formality of disputing;" unless, indeed, you want him to be "an insignificant wrangler, opiniator in discourse \* \* \* contradicting others \* \* \* questioning everything, and thinking there is no such thing as truth to be sought but only victory in disputing." The whole thing is "disingenuous, so misbecoming a gentleman \* \* \* as not to yield to plain reason and the conviction of clear arguments." It is "the way and perfection of logical disputes that the opponent never takes any answer, nor the respondent ever yields to any argument," unless he be "a poor baffled wretch \* \* \* under the disgrace" of not holding his side, which is "the greater aim and glory in disputing."

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<sup>880</sup> Eggleston's *Transit*, page 246.

## SOME DEFENSES.

But disputation was not all one black spot, there were some specks of enlightenment about it. It was wooden-headed, it was servile, but submissiveness, respect for authority, was good training among a rough, barbaric people. It was also a means of publishing ideas at large. There were not many sources of knowledge, and that was a very skillful use to make of those few, helping the speaker and also informing his hearers. It was in time a development as it was an instinctive revolt against the deadening influence of mere memory. Indirectly, and far down in the mold of ignorance and conservatism, it began the foundations for the modern temple of freedom of thought and liberty of opinion. It bred skepticism, it loosened the ceremonies bound around the body centuries before, it encouraged independence and made the mind acute. It also gave acquaintance with the principles of formal logic and was an admirable practice in the application of the knowledge got from lecture and book. Within bounds it was admirable training. The world will never find a substitute for wringing and torturing the very essence of meaning from language. No one can tell what delicate shades of thought, what curious twists of logic, what shadows and obscurities lurk in the corners of discourse until there has been a bitter contest between two competitors. The legislator, the advocate at the bar, the judge on the bench, the jury in the box, are to-day the debtors of this old medieval process.

## GEORGE HENRY LEWIS'S TRIBUTE.

The author of the most fascinating history of philosophy in our speech has a gentle pat of commendation for this exercise, which he had such a fine opportunity of judging from his long tramp through the thorny wilderness of philosophical speculations from the beginning of time. He apolo-



gizes for it, stands up for it! "Something may also be said in favor of that art of disputation, against which so much eloquence has been expended. It was doubtless carried to a dangerous and ridiculous excess and seems utterly worthless and wearisome now. Yet it was to the athletes of the middle ages that parliamentary debate has been to the English people: a good though by no means an unmixed good, and far from the best." "To Scholasticism we owe the emancipation of Philosophy. It was the first, and at that period, the only possible solvent of Theology. By establishing the claim of reason \* \* \* it brought into vigorous activity the great instrument, doubt, the instrument of research."<sup>331</sup>

#### QUASI-DISPUTATIONS.

There were several other educational exercises very similar to disputation, though none of them attaining a thousandth part of the size. Beginning in the middle ages we find "declamations," which most likely did not differ very much from the exercises of that name to-day. In some instances though the two words are almost confused so that the same exercise might have been meant. The scholarly biographer of Milton is of the opinion that declamations were utterances preceding the regular disputation, a kind of soothing harmless utterance, such as the chairman of a political meeting might deliver just before the joint debate starts.<sup>332</sup>

There is also to be found frequent mention of determination, clearly a minor act. As the very term itself implies, it was largely confined to the definition of some term and then the subsequent maintenance of that view against any opponent.

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<sup>331</sup> Lewes's *History of Philosophy*, Vol. 2, page 4.

<sup>332</sup> Masson's *Milton* Vol. 1, pages 241, 246.

## COMMONPLACING.

Allied to disputation also was a very popular pedagogical performance usually called commonplacing. In reality it was a short sermon, very often delivered at the opening of the day's work in the presence of the whole school. It was a logical outcome of the religious conception of all education, but it was degraded by unscrupulous students taking advantage of the occasion to get even with some of their instructors and some of their fellows by indulging in scurrilous personalities.<sup>333</sup> It was sometimes based upon sermons delivered the previous Sunday, afterwards it rose to the dignity of a discourse on some text of Scripture and the prig D'Ewes, just two years before the Pilgrims set foot on that everlasting rock at Plymouth, notes the whine of a minister that the students filled great volumes with collections on human arts and sciences but ignored divinity.

In other instances some moral or theological subject was often assigned for a student to expound and philosophize upon, such as man being created in God's image or the creation of the soul. It is to this quaint, soul-exposing diarist, Samuel Sewall, that we owe our gratitude for a definition of commonplacing, which he says "denotes the reducing and treating of topics of theology, philosophy, etc., under certain common-place or general heads, and is recognized as follows in Laws, Liberties and Orders of Harvard College, 1642-46, as an exercise expected at certain times of Resident Bachelors as well as Sophisters among the undergraduates."<sup>334</sup>

This eternal habit of moralizing and sermonizing was dubbed analyzing by Wadsworth in certain places of his journal, interchanging that with common-placing.

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<sup>333</sup> J. B. Mullinger, Vol. 2, page 472, of his *Cambridge*.

<sup>334</sup> Samuel Sewall's *Diary*, 1674, in Vol. 5, 5th series, *Mass. Hist. Soc. Coll.*, pages 4, 5, 51.

## COMMON-PLACE BOOKS.

It was a very soft transition from the dictation of text-books to the making of common-place books. Perhaps they might be more accurately portrayed as note books, covering daily events, summaries of lectures, notes on books read, and references to sermons, in short an index to a man's life. Milton has left one in which he has great classes, such as politics, Republica, Leges, Rex, Tryannus, Nobilitas, covering such heads as

“Malum Morale”

“De viro bono”

“De duellis”

“De morte”

“De curiositate.”<sup>385</sup>

His comments will range from a few words to a page or so, though the most are abbreviated.

As a new world counterpart of Milton we have the topics of the little common-place book of Perez Fobes, a student at Harvard in 1760, the contents of his thin note book being appended below, the three numbered heads lacking being covered by his disputation above.

4. Has another on “The soul thinks always?” Several pages.
5. Quotes poetry on grace and patience.
6. Notes an excellent sermon heard.
7. Other sermons; abstracts one.
8. [Starting at other end,] some pages, diary mixed with Latin.
9. Moralising. “If we would ever get to Heaven we must fight the good fight of faith.” [Others follow.]
10. Bought tea, picture.

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<sup>385</sup> Camden Society, Volume XVI, 1876, edited by Alfred J. Hornwood, pp. 60, including original index.

11. Notes on geography lesson that earth so large, other dimensions.
12. Notes sermons.
13. Notes on Joseph, Potiphar's wife.
14. Diagram of "solar system with the orbits of five remarkable comets."—Table of distances of planets from stars: planetary diameters: notes on astronomy, as distances, sizes, seasons, revolutions, etc., concluding with pious ejaculations on greatness and power of God, etc.
15. Notes, examined by President, Tutors, and overseers.
16. Constantly notes derivation of words.
17. Notes on history and geography.
18. "To collect books" "to examine them."
19. All along notes "our question this day was."  
Specimen, "Idae clarae et distinctae sunt criterion veritatis."
20. Notes on physics—pressure of air.
21. Geometrical figures.
22. Celebration over taking of Quebec.
23. Notes on studying Homer.
24. "Was ordained."
25. 25 pp. Definitions: "cascades," "archetype," "Bal-  
last," "brigade," etc., "athletic," "bibulous;" apparently taken from dictation, as some words copied, not defined.

#### LAST TRACES OF COMMONPLACING.

Naturally if this custom survive anywhere it would be fittingly in connection with divinity, with which it started and with which it was linked hand in hand throughout its career. Tucked away in Christ's College, Cambridge, England, over half a century ago, was the remnant of this century-old practice. The Fellows of that institution were in the habit of giving talks or short sermons on Monday morn-

ings in the chapel, based on biblical texts, covering such notions as happiness, baptism, study of the past, times of ignorance, purging of the conscience, we know in part, etc.<sup>336</sup>

#### DIED WITH COLONIALISM.

As a formal part of the curriculum disputation expired substantially with the close of our colonial period. Death was not sudden, it came gradually with the intrusion of other ideas. It was the passing away of an old friend whom we mourn, although his day of usefulness has departed. There is a very plaintive wail from President Stiles of Yale in 1789: "the seniors have had but one syllogistic disputation this year and perhaps half a dozen last year. There was only one last commencement—none this. Thus farewell syllogistic disputation in Yale College much to my mortification."<sup>337</sup>

Six years later at Leicester Institute, in Connecticut, is another note of remorse when the trustees desired disputations to be included in the school exhibitions.<sup>338</sup> These two are certainly among the latest instances of the survival of this old medieval scholastic exercise among our Protestant institutions.

#### REMNANTS IN ENGLAND.

In England, however, there is evidence of its continuing much longer, even to about the middle of the nineteenth century. At Westminster, "those tournaments of Latin and logic, in which Queen Bess was wont to reward a successful champion with a purse of gold from her virgin hand," were still carried out by boys who stood forth to challenge for their schools. The act was given with practically all

<sup>336</sup> *Loci Communes*, by C. A. Swainson and A. H. Wratislaw, 1848.

<sup>337</sup> Stiles's *Diary*, Vol. 3, page 360.

<sup>338</sup> Barnard's *American Journal of Education*, Vol. 28, page 799.

the fullness of several centuries earlier, in some instances lasting from early morn till nine at night.<sup>339</sup>

In some of the divinity work at Oxford the custom remains, though of course greatly modified. "Disputations in divinity are still delivered, though without opponents, by candidates for divinity degrees," thus we learn from a late newspaper letter.<sup>340</sup>

#### RELIGIOUS DISPUTATIONS.

In the education of Catholic priests disputation is still a favorite discipline. It was recorded of Pope Leo XIII that he was very successful when preparing for his clerical life in disputation in public.<sup>341</sup> The Jesuits are rigorously drilled in Latin disputation during their educational preparation. Great stress is laid upon it at Woodstock, Maryland, and also in St. Louis. President Roosevelt heard an exercise in the latter only a few years ago, "the grand act," a defense of Catholic theology against all comers.<sup>342</sup>

#### IN GEORGETOWN UNIVERSITY.

Not only in the theological courses of Catholic institutions, but also in some of the secular departments is disputation still carried on. In one of them at least, Georgetown University, Washington, D. C., can be witnessed several times a year this medieval educational exercise, conducted with all of the formality and rigidity possible after these centuries of modifications, juniors once weekly, seniors twice. But the essentials are still there and the incidentals, so far as the evidence can restore the olden times, are but slightly altered. There on a bluff overlooking the Potomac, in the quiet and solemnity of an academic hall, before an assemblage of

<sup>339</sup> *Public Schools*, page 182.

<sup>340</sup> *The Nation*, August 23, 1906, page 163.

<sup>341</sup> J. B. O'Reilly's *Leo XIII*, page 77.

<sup>342</sup> *St. Louis Republican*, April 30, 1903.

teachers and student, one feels transported back across the intervening periods to the atmosphere of three or four hundred years ago, as the earnest youthful contestants face each other and in a logical combat struggle for the mastery, finally beating out the last grain of thought from the question at issue, all done in the calm, passionless manner of automatons that are pure intellect only. The program for one of these frays, on a bright bracing fall day is shown below, though not all the points were worked over at that time. Though the issues are in Latin the argument was in English.

## THESES

## EX ETHICA DEFENDENDAE

IN

## COLLEGIO GEORGIOPOLITANO

Die XXIV. Nov., MCMVI.

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- I. Deus solus est finis ultimus objectivus hominis.
- II. (a) Ignorantia invincibilis, sive juris sive facti, tollit voluntarium, ac proinde acto ex tali ignorantia facta non est imputabilis ad culpam.  
 (b) Ignorantia vincibilis non excusat a peccato.
- III. Intrinsecum discrimen inter bonum et malum morale intercedit.
- IV. Moralitas non est desumenda ex utilitate, nec privata, nec publica.
- V. Moralitas actuum desumitur ex objecto, fine et circumstantiis.
- VI. (a) Existit lex aeterna.  
 (b) Existit lex naturalis.  
 Defendet:  
 Objicient:  
 Datur cuilibet facultas objiciendi.

It will be noted that two of the terms are different from their ancient progenitors as we have here defendet and objicient instead of respondens and opponens. The plural of the verb is due to the presence of two objectors. In the actual verbal clash there must also have been a considerable gap between to-day and yesterday. There was nothing of the lively snap and fire that the authorities record of mediæval battles. Here these gallant young knights confine themselves to a series of propositions in syllogistic form, with every vestige of personal element sternly excluded. But Keckerman, with his complicated directions, came to mind when each side before answering the other would solemnly and carefully repeat almost the exact words of the reason just given, before offering his response. In all of this repetition the third person was used.

A taste of former feasts is afforded by a relic in the library, a framed schedule of a dignified disputation more than a century ago, large and imposing, two feet long by nearly the same width, crossing the Atlantic to Europe. A Catholic author also has recently, in his treatment of theology, laid down minute directions for the proper observance of disputation at the present day, not as didactic and educative as Keckerman, and happily not as swollen.<sup>343</sup>

#### SURVIVALS AT PRESENT.

No branch of knowledge is entirely lost. It may decay, it may be even considered dead, it may be snatched off and cast aside, but there are rootlets or fibres or jagged ends and rough edges that stand as testimony of what has been. Education has broadened enormously and in an ordinary use of words we can speak of certain studies having dropped out, but they have all left their impress behind, sometimes obscured so that they are practically forgotten.

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<sup>343</sup> S. J. Hunter, *Outline of Dogmatic Theology*, three volumes in all. Pages 514-518 of Vol. 1.



Disputation, in some of its influence, is still with us. The theses for the doctorate in our great universities grew out of medieval disputation. To-day the candidate faces a board of examiners ready to maintain views he has advanced in his dissertation. Half of the exercise, it is true, has gone, there is no opponent. Our seminaries are the breeding places for these exercises, preparing young men for this contest.

Our debating societies, in the patterns of our legislatures, sprang in part from the old custom. Stiles speaks of two library companies in Yale which used to hold their quarterly exhibitions separately, very likely the faint beginnings of the debating clubs.<sup>344</sup>

The most notable survival, however, is the new interest being manifested in forensics by the number of institutions in this land. Some of them require every student to take some part in the work, stipulating the number of times debates are to be held during the session. A wearisome string of text-books has come out of late years. The preface and the directions generally read very much like their fore-runners of the middle ages. One of the latest is almost as minute as Keckerman, just as tiresome and just as useless. We might groan in agony to see this reversal to a discarded study, a lusty man trying to go back to the knee breeches and jacket of his youth.

#### SUMMARY.

#### THE FOOD THAT MADE THE GIANTS.

A unique and remarkable educational leader, one of the greatest of the new world, rather early in his career wanted to know what fare great Revolutionary captains had fed upon that had made them so capable in a grave emergency. Mr. D. C. Gilman, in 1871, in an academic utterance, had

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<sup>344</sup> Stiles's *Diary*, Volume 3, page 337.

said: "It will be a curious inquiry for some philosophical writer on the intellectual progress of this country to ascertain what were the themes, the text-books, the methods of instruction and tuition which prevailed in the American colleges prior to the Revolution; what sort of instruction at Cambridge filled Samuel and John Adams with their notions of civil liberty; what sort of culture at New Haven brought Jonathan Edwards to his lofty rank among the theologians of this country and of Scotland; what discipline at Princeton fitted James Madison to exert such an influence upon the formation of the Constitution; and what academic drill at Columbia College, in New York, made Alexander Hamilton the founder of our national credit and our financial system." <sup>345</sup>

It is not within the limits of this study to attempt an answer in full to this pregnant utterance as so much of the strength of these eminent characters was developed after they had left the care of the schoolmaster, but it may be worth while to consider what mental nourishment they got in school that fitted them for the huge tasks they performed.

It was another sky over their heads, another atmosphere around them, another problem for them to solve. It was an age of discussion, not of investigation; it was a war of words, not a research into nature. Men harassed their souls to know what the masters meant, they did not gather their forces and concentrate their efforts to learn the results of science. For the epochs past they had been dealing with terms of speech, they had been fashioning their language, they had been sharpening their dialectical wits, they had been polishing the symbols of sound. They had been delving in the past and they had begun to weigh the value of tradition and custom. They were hoarding their powers to break the crust of conservatism.

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<sup>345</sup> H. B. Adams, *History in American Colleges and Universities*, Circular No. 2, Bureau of Education, 1887, page 50, quoting from Gilman's Cornell address.

Their Latin, their Greek, their Hebrew, their linguistic study generally, had given them a verbal razor for splitting the hairs of discussion. Logic, metaphysics, and theology had whetted their ardor still more keenly and had furnished them with great principles, which became bulwarks of safety to fall back upon. The little history they had supplied them with another form of argument, the most convincing to the average human mind, that of example. The shreds and patches of science that they got hardened them in their respect for authority. The formal rules and processes of mathematics that they memorized set them in crystals of unchangeable faith.

Thus they stood, with trained memory, fortified with great axioms, equipped with flexible and adaptive language, panoplied with hard dry logic. But all this arsenal, choked with the lore of the ancient world, needed the hand of activity, the power to do. The gymnasium lacked the athlete, and disputation met this want. All of this outfit was mere lumber and rubbish unless it could be transformed into the energy of accomplishment. In this contest the powers of the mind were put to service. It was only a game, it is true, over a fantastic difference, but just as friendly trials of strength develop for future combats of importance so these mimic battles taught how to win.

The contest with England hinged upon the construing of language, the meaning of statutes, the essence of practice and customs. It was a great debate as to the rights of each side in which ultimate decision rested upon the deep foundation stones of human conduct. The two Adamases, Madison, Jefferson, and their brethren were at home in this field. They knew how to thrust, to parry, to ward, to defend, to attack with the pen, because they had been at that form of warfare all of their days. They knew how to build an argument, to construct a logical fortress; that had been their pastime since youth. They could marshal words,

they could explore the past, they could clinch with quotation or with reference to an overshadowing name; they had been doing that for years. They could apply doctrines, they could draw conclusions from accepted premises, they could formulate new lines of departure, because these things had been their meat and drink.

But when they had tramped the whole matter out, had laid down the philosophical guide lines, had triumphed over the king and his stupid advisors, had taken the old mudsills and reared upon them another edifice for the housing of a new nation, their work was done and has been done for all time. With infinite care they fixed the relations for the different elements in this household, but in all of their labor they got very little from the beaten road that they had walked in from their infancy. They were still dealing with the maxims and the environment of human behavior, they were still using the tools they had been supplied with in philology, in ethics, and in elementary philosophy. They were victors over their antagonists across the water because they were more powerful in elevated discussion. They had struck against the shell that cramped the growth of the human race and shattered it. Without knowing it they had ended one epoch in the struggle of humanity upwards. With the implements forged for them in the medieval school they reared a mighty fabric as an example that men could live in unity and peace under their own government. All the advances towards human liberty since then on the face of the globe have been lighted by the reflection from the structure they erected. The school did its work, and they did theirs, and we are the debtors of both.

Man was emancipated from his own past. Since then he has turned to science. Getting control of himself he sought control of nature. He had done forever with raking and gloating in the charnel houses behind, he set his face to the morning light ahead. He has seen more in one century than his fathers saw in twenty.

## BIBLIOGRAPHY.

The following list by no means includes all the books handled in the course of this investigation. A good many that furnish an important idea or suggestion are not represented here, as the limitation of space required some selection to be exercised. After much deliberation it was deemed best to arrange all of them alphabetically by the authors where possible, with enough of cross references to enable any title to be found. A classification would have necessitated a painful amount of repetition, as in many instances the same authority would be used for a half dozen or more of the previous heads. It may not be amiss to express a lively sense of gratitude even though to inanimate institutions, but this task could never have been accomplished without the cheerful assistance of librarians and their staffs in all of the large libraries in the eastern part of this country. A special acknowledgment is due to one, very much smaller than some of the others, but a diamond mine for educational purposes, especially in text-books—the American Antiquarian Society, Worcester, Massachusetts. The different manuscript sources are indicated below, though it is only fair to state that along that line Harvard was found the most beneficial. This is only natural considering that it is the oldest. Unfortunately the early records of William and Mary were destroyed by fire, a fate that the Harvard library suffered also, especially in 1765, but fortunately the archives have been pretty well preserved.

The titles below have all been condensed, just enough being retained to enable the book to be found in a library by any investigator so minded. No attempt has been made to satisfy the technical bibliographer, as he, if capable, is amply able to care for himself, and further would never rely on another's collation.

- ABBOT, ABIEL. *History of Andover.* 1829.
- ABELARD. See *Compayré.*
- ADAMS, HERBERT B. *William and Mary.* U. S. Bureau Educ., 1887.
- ADAMS, HERBERT B. *History in American colleges and universities.* U. S. Bureau of Education No. 2, 1887.
- ADAMSON, JOHN WILLIAM. *Pioneers of modern education.* 1905.
- ALCOTT, A. BRONSON. *New Connecticut.* 1887.
- ALEXANDER, S. D. *Princeton College.* 1872.
- ALSTEDII, JOHANNIS HENRICI. *Thesaurus chronologiae.* 1650. Latin.
- AMERICAN-JEWISH HISTORICAL SOCIETY. Organized 1892.
- AMERICAN JOURNAL OF EDUCATION, THE. Edited by Henry Barnard. 31 volumes. 1855-1881.
- AMERICAN MAGAZINE. Vol. I, 1743-44.
- ASCHAM, ROGER. *English works.* 1761.
- ASCHAM, ROGER. *The whole works of Roger Ascham.* 4 volumes. 1865.
- ATKINSON, THOMAS. *Cambridge.* 1897.
- BAKER, THOMAS. *History of the College of St. John the Evangelist, Cambridge.* Edited by John E. B. Mayor. 2 vols. 1869.
- BENEZET, ANTHONY. *The Pennsylvania spelling book.* 1779.
- BEVERLY, ROBERT. *The history and present state of Virginia.* 1705.
- BOONE, RICHARD GAUSE, A. M. *Education in the United States.* 1889.
- BOSTON PUBLIC SCHOOL. See *Catalogue.*
- BRODHEAD, JOHN ROMEYN. *History of New York.* 1853.
- BROOKS, CHARLES. *History of Medford.* 1855.
- BROOKS, PHILLIPS. *Essays and addresses.* 1894.
- BROWN, ELMER ELLSWORTH. *Our middle schools.* 1903.

- BUREAU OF EDUCATION OF THE UNITED STATES. Various publications.
- BURGERSDICH FR. *institutionum logicarum libri duo*. London: 1641.
- BURTON, WARREN. *The district school*. 1897. Boston: Lee and Shepard. (One of the most entertaining and detailed accounts of actual child life in school to be found. The name "Warren, Burton" appears only in pencil on the title page.)
- CAJORI, FLORIAN. *The teaching and history of mathematics in the United States*. U. S. Bureau of Educ. Circular No. 3, 1890.
- CAMDEN SOCIETY PUBLICATIONS. Over fifty volumes.
- CATALOGUE OF THE BOSTON PUBLIC LATIN SCHOOL. 1886.
- CHAPLIN, JEREMIAH. *Life of Henry Dunster*. 1872.
- CHASE, GEORGE WINGATE. *The history of Haverhill*. 1861.
- CHEEVER, EZEKIEL. (Some note books of his, in a very painful hand, in the library of the Massachusetts Historical Society.)
- CLARK, S[AMUEL]. *A new description of the world*. 1712. (The library catalogues to-day spell the name Clarke. Small 18 mo. no maps, only one illustration.)
- CLEVELAND, JOHN. *The works of Mr. John Cleveland*. 1687.
- COCKER, EDWARD. *Cocker's arithemtic, being a plain and familiar method*. By Edward Cocker. 56th edition. London. 1767.
- First page has, as noted in text:  
 "Ingenious Cocker, now to rest thou'rt gone,  
 "No art can show thee fully, but thine own.  
 "Thy rare arithmetic alone can show  
 "Th' vast sums of thanks, we for thy labor owe."
- COLONIAL SOCIETY OF MASSACHUSETTS. See Publications.
- COMPAYRE, GABRIEL. *Abelard and the origin and early history of universities*. 12mo. 1893.

- COMPAYRE, GABRIEL. *The history of pedagogy.* Boston. 1886.
- CORDERI colloquiorum centuria selecta in usum tironum. Editio prima portsmuthiensis edita Carolo Tappan 12mo., pp. 108. Portimuthi Neo-Hantonia. 1810.
- DAVIDSON, THOMAS. *A history of education.* New York. 1900.
- D'EWES, SIR SIMONDS, BART. *The autobiography and correspondence of.* 2 volumes. 8vo. London. 1845.
- DEXTER, EDWARD GRANT. *A history of education in the United States.* New York. 1904.
- DEXTER, FRANKLIN BOWDITCH, M. A. *Biographical sketches of the Graduates of Yale College.* 3 volumes. New York. 1885.
- DICTIONARY OF NATIONAL BIOGRAPHY.
- DILLAWAY, CHARLES KIRKHAM. *A history of the grammar school, or, "The Free Schoole of 1645 in Roxburie."* Roxbury. 1860.
- DILWORTH, THOMAS. *A new guide to the English tongue.* Harrisburgh. 1811.
- DILWORTH, THOMAS. *The young book-keeper's assistant.* York. 1839 .
- DOCUMENTS relating to the university and colleges of Cambridge. 3 volumes. London. 1852. (Practically all in Latin: very rare and valuable.)
- DRAKE, SAMUEL G. *The history and antiquities of Boston.* Boston. 1856.
- DUNSHEE, HENRY WEBB. *History of the school of the collegiate reformed Dutch church in the city of New York.* New York. 1883.
- DYER, GEORGE. *The privileges of the University of Cambridge.* London. 1824.
- EDUCATION, a monthly magazine. Boston.
- EGGESTON, EDWARD. *The transit of civilization in the 17th century.* New York. 1901.



- ENFIELD, WILLIAM. Institutes of natural philosophy. London. 1785.
- ENFIELD, WILLIAM. The history of philosophy. London. 1839.
- EVERETT, EDWARD. Orations and speeches on various occasions. Boston. 1850.
- FELT, JOSEPH B. History of Ipswich, Essex, and Hamilton. Cambridge. 1834.
- FELT, JOSEPH B. The annals of Salem. Salem. 1827.
- FISHER, GEORGE. The instructor: or young man's best companion. London. 1779; also 1799, 1801.
- FITHIAN, PHILIP VICKERS. Journal and letters, 1767-1774. Princeton, N. J.: The University Library. 1900.
- FOWLER, THOMAS. Locke. 12mo. New York. English Men of Letters series.
- FOX-BOURNE, H. R. The life of John Locke. New York. 1876.
- FROTHINGHAM, RICHARD. The history of Charlestown. Boston. 1845.
- FROUDE, J. A. Life and letters of Erasmus. New York. 1894.
- FULLER, THOMAS. The church history of Britain. Oxford: University Press. 1845.
- GASSENDI PETRI opera omnia in sex tomos divisa. Lugduni. 1658.
- GASSENDI, PIERRE. Institutio astronomica. London: H. Dickinson. 1683.
- GIBBON, EDWARD. The history of the decline and fall of the Roman empire. With notes by the Rev. H. H. Milman. 6 volumes. New York: Harper and Bros. 1858.
- GIBBS, DAVID. Article, "Pedagogy of Geography," in March, 1907, issue of *Pedagogical Seminary*, Worcester, Mass.
- GLIMPSES OF COLONIAL SOCIETY. Edited by W. Jay Mills. Philadelphia and London.

- GORDON, PAT. Geography. London. 1693.
- GORDON, WILLIAM. The universal accountant, and complete merchant. Dublin. 1796.
- GOUGH, JOHN. A treatise of arithmetic. Philadelphia. 1788.
- GOUGH, JOHN. Practical arithmetick in four books. Dublin. 1798.
- GRANT, SIR ALEXANDER. The story of the University of Edinburgh. London. 1884.
- GRAVESANDE, WILLIAM JAMES. Mathematical elements of natural philosophy. London. 1737. 4th edition. Numerous illustrations.
- GREENWOOD, ISAAC. Arithmetick vulgar and decimal, with the application thereof, to a variety of cases in trade and commerce. Boston: N. E. Printed by S. Kneeland and T. Green, for T. Hancock at the sign of the Bible and three crowns in Ann street. 1729. Only a few copies known, perhaps only three, Congressional Library copy does not have name of any author on title page, but "Isaac Greenwood" is pencilled in proper place, and volume is catalogued under Greenwood. Clearly some pupil's copy as many of examples have been worked out in ink in the blank spaces evidently left for that purpose. Possibly Thomas Jones did this as his name appears on title page thus: "Thomas Jones's Book.")
- GUTHRIE, WILLIAM. A new geographical, historical, and commercial grammar. 1777.
- HALLAM, HENRY. Introduction to the literature of Europe in the 15th, 16th, and 17th centuries. 1837.
- HARLEIAN MISCELLANY, THE. London. At least 12 volumes, 8vo.
- HARVARD ARCHIVES, MSS.

Through the courtesy of Dr. W. C. Lane, the librarian, all the Mss. data in Harvard at all likely to yield any points were leafed over. The abstracts made by one of the foremost American historical scholars were found of great assistance. A very careful

analysis of the yearly records has been made by Mr. A. M. Davis, published as No. 50 of the bibliographical contributions of Harvard University. The exercises left by former students were also examined and something found in these bearing on mathematics and disputation. No. 32 of these biographical contributions, edited by J. Winsor, has a list of mathematical theses of the two upper classes but not beginning till the end of the struggle with England, all accurately listed by Henry C. Badger.

HAZEN, REV. HENRY A. History of Billerica. Boston, 1883.

HEEREBOORD, ADRIANUS. Meletemata philosophica in quibus pleraeque res metaphysicae ventilunter. Lugduni Batavorum. 1659. (British Museum catalogue in Congressional Library.)

Copy in Boston but none in Congressional Library of this study of philosophy.

HELVICI, CHRISTOPHORI, V. C. Theatrum historicum et chronologicum. Editio sexta. Oxoniae. 1662.

Of course this is hardly a tenth of what Helwig has on his folio title page, but enough to identify him; printed on one side of page only, perhaps for notes. One of Oxford editions put into English as thus.

HELVICUS, CHRISTOPHER. The historical and chronological theatre of Christopher Helvicus. London: printed by M. Flesher for George West and John Crosley. 1687.

Both have outlines, tables and diagrams in such order and profusion as to suggest an architectural head, wooden at that, on the shoulders of Christopher Helvicus.

HOLYOKE, THOMAS, D. D. A large dictionary in three parts: English, Latin and proper names performed by the great pains and many years study of Thomas Holyoke, D. D. London. 1677.

HOSMER, JAMES K. Samuel Adams. American Statesmen series. Boston. 1885.

HUBNER, JOHANN. A new and easy introduction to the study of geography. London. 1742.

- HUGHES, REV. THOMAS ALOYSIUS. *Loyola*. New York, 1892.
- HUNTER, SYLVESTER JOSEPH. *Outlines of dogmatic theology*. New, York, Cincinnati, Chicago.
- HUTCHINSON, THOMAS. *The history of Massachusetts*. Boston. 1795.
- JARRATT, REV. DEVEREUX. *Life*. Baltimore. 1906.
- JONES, HUGH, A. M. *The present state of Virginia*. London, 1724.

Author also wrote the *accidence*, below, of which so few copies known to be extant, one copy listed in the British Museum catalogue of printed books, London, 1889, but long search and much correspondence failed to locate any copy in this country either in public or private hands. Jones also wrote on mathematics.

- JONES, HUGH, A. M. *An accidence to the English tongue*. 1724.
- KECKERMAN, D. BARTHOLOMEW. *D. Bartholomaei Keckermani Dantiscani, in gymnasio patrio philosophiae professoris eruditissimi, operum omnium quae extant*. Genevae: apud Petrum Aubertum 1614. 2 volumes.
- KEMP, E. L. *History of education*. Philadelphia. 1902.
- KIDDLE AND SCHEM. *Dictionary of education and instruction*. 1881.
- KINGSLEY, WILLIAM L. See Yale College in this bibliography.
- LAURIE, S. S. *John Amos Comenius*. Syracuse, New York. 1892.
- LAURIE, S. S., LL. D. *The rise and early constitution of universities*. New York. 1887.
- One of most entertaining of writers on educational history.
- LEACH, ARTHUR F. *English schools at the reformation*. Westminster. 1896.
- LEGGE, JAMES. *The life and teachings of Confucius*. London. 1872.

- LE GRAND, ANTHONY. An entire body of philosophy. London. 1694.
- LELAND, JOHN. The itinerary. Oxford, England. 1770.
- LEVERETT, C. E. A memoir, biographical and genealogical, of Sir John Leverett. Boston. 1856.
- LEWES, GEORGE HENRY. The history of philosophy. London. 1867.
- LOCKE, JOHN. See Quick.
- LOWTH, ROBERT. A short introduction to English grammar. London. 1793.
- MAITLAND, REV. S. R. The dark ages. London, 1844.
- MARTIN, GEORGE H. The evolution of the Massachusetts public school system. New York. 1894.
- MARTIN, W. A. P. The lore of Cathay. New York. 1901.
- MARY, JOHN. A new French and English grammar. Boston. 1784.
- MASSACHUSETTS COLONIAL SOCIETY. See Publications.
- MASSACHUSETTS HISTORICAL SOCIETY. . . . .

Organized in 1791, has two sets of publications, Collections and Proceedings. Very troublesome for reference purposes, and difficulty enhanced by several series of each. Still it's work of most dignified and valuable character, with indexes at intervals coming nearly to the present. Especially to be noted is the index to the Proceedings.

- MASSACHUSETTS RECORDS. See Records.
- MASSON, DAVID. The life of John Milton. Cambridge. 1859.
- MATHER, COTTON. Magnalia christi Americana. Hartford. 1853.
- MATHER, INCREASE. Kometographia, or a discourse concerning comets. Boston. 1683.
- MCCABE, W. GORDON. Virginia schools before and after the Revolution. Charlottesville, Va. 1890.
- MEADE, BISHOP. Old churches, ministers and families of Virginia. 2 volumes. Philadelphia. 1897.

MELANTHONIS PHILIPPI OPERA QUAE SUPERSUNT OMNIA. Edidit Carolus Gottloeb Bretschneider. Halis Saxonum: C. A. Schwetschke et Filium. 1834. Latin. 28 volumes.

MEMOIR AND CORRESPONDENCE OF JEREMIAH MASON. Privately printed. Cambridge. 1873.

MIGNE, J. P. *Patrologia latina*. 1863.

Collection of writings of learned ecclesiastics and fathers. A mammoth undertaking well carried out. The above is the binder's title.

MILTON, JOHN. A commonplace book, and a Latin essay and Latin verses presumed to be by Milton. 1876.

MILTON, JOHN. The works of John Milton in verse and prose. London. 1851.

MINCHIN, J. G. COTTON. Our public schools. London. 1901.

MONROE, PAUL. A textbook in the history of education. New York. 1905.

MORE, HENRY. *Enchiridion metaphysicum: sive, de rebus incorporeis succincta & luculenta dissertatio*. Londini: Guilielum Morden, Bibliopolam Cantabrigiensem, 1671.

MULCASTER, RICHARD. The educational writings of Richard Mulcaster, 1532-1611. Edited by James Oliphant. 1903. Glasgow.

MULLINGER, J. BASS. The schools of Charles the Great and the restoration of education in the 9th century. London. 1877.

MULLINGER, JAMES BASS, M. A. The University of Cambridge from the earliest times to the royal injunctions of 1535. Cambridge, England. 1873.

MULLINGER, JAMES BASS, M. A. The University of Cambridge from the royal injunctions of 1535 to the accession of Charles the First. Cambridge, England. 1884.

MULLINGER, J. BASS. A history of the University of Cambridge. London. 1888.

MUNSTER, SEBASTIAN. *Cosmographia universalis lib. VI in quibus, juxta certioris fidei scriptorum traditionem describuntur, . . . 1550.*

Immense folio, with some dozen maps, and hundreds of illustrations, two very realistic ones, pages 1100, 1101, showing cannibalistic butchers chopping up a dead body, and roasting one complete on a spit. Book of special interest to Americans as a part of it, rendered into English three years later, in 1553, is described as "the second English book on America," appearing thus:—

MUNSTER, SEBASTIAN. "A treatyse of the newe India with other newe founde landes. . . after the description of Sebastian Munster in his boke of universall cosmographie." London: E. Sutton. 1553.

Reprinted by Edward Arber, editor, in 1895. To be noted that in neither of these titles is the spelling of his name Muenster or Münster, but library cards have this form to-day.

NEW ENGLAND PRIMER, THE. Edited by Paul Leicester Ford. New York. 1897.

NEW HAMPSHIRE HISTORICAL SOCIETY.

ORCUTT, WILLIAM DANA. *Good old Dorchester.* 1893.

O'REILLEY, RT. REV. BERNARD. *Life of Leo. XIII.* 2 volumes. Philadelphia, Chicago, Toronto. 1902.

PAIGE, LUCIUS R. *History of Cambridge, Massachusetts, 1630-1877, with a genealogical register.* Boston. 1877.

PAINTER, FRANKLIN VERZELIUS NEWTON. *A history of education.* New York. 1886.

PAULSEN, FRIEDRICH. *The German universities.* 1895.

PEDAGOGICAL SEMINARY, March, 1907, see Gibbs.

PEIRCE, BENJAMIN, A. M. *A history of Harvard University, from its foundation in the year 1636 to the period of the American revolution.* Cambridge. 1833.

PIERSON, ABRAHAM. (The manuscript copy of his notes on lectures he took at Harvard and used afterwards when he taught at Yale, preserved in the library of Yale University. He was the first president of Yale and his statue now adorns the campus.)

- PIKE, NICHOLAS. A new and complete system of arithmetic. Newbury-Port. 1788.
- PLUNKETT, MRS. H. M. Ten co-educated girls two hundred years ago. *Scribner's Magazine*, January, 1903.
- PORTA, JOHN BAPTIST. *Magia naturalis*. 1644. Translated into English as follows:—
- PORTA, JOHN BAPTIST. *Natural magick*. London. (1658, written in ink at bottom of Congressional Library copy.)
- PRATT, DANIEL J. *Annals of public education in New York*. In 82d annual report of Regents of the University of New York.
- PUBLICATIONS of the Colonial Society of Massachusetts. Boston.
- PUBLIC SCHOOLS, THE. By the author of "Etoniana." Edinburgh and London. 1867.
- QUICK, REV. R. H. Some thoughts concerning education by John Locke with introduction and notes. Cambridge. 1880.
- QUICK, ROBERT HERBET. *Essays on educational reformers* 1890.
- QUINCY, JOSIAH. *The history of Harvard University*. 2 volumes. Cambridge. 1840.
- RABELAIS. *Works*. Translated from French, by Gustave Dore. London, Chatto and Windus. (No date in congressional library copy.)
- RAMI, P., *scholae in liberales artes, quarum elenchus est proxima pagina...* 1569.
- RAMUS, P., See Waddington.
- RAMUS, PETER (Pierre de la Ramee). *The art of logic out of Aristotle and set in due forme*. London. 1626.
- RASHDALL, HASTINGS. *The universities of Europe in the middle ages*. 2 volumes. Oxford. 1895.
- RATIO STUDIORUM atque institutio studiorum societatis Jesu. *Autoritate septimae congregationis generalis aucta*. Antverpiae. 4 volumes. 1635.



- RATIO STUDIORUM et institutiones scholasticae societatis Jesu per Germaniam olim vigentes collectae concinnatae dilucidatae a G. M. Pachtler S. J. (volume 5 of *Mon. Germ. Pedag.*) Berlin, 1887.
- RECORDE, M. ROBERT. *The pathway to knowledge, containing the first principles of geometrie.* London. 1551.
- RECORDE, M. ROBERT. *The grounde of artes: teaching the worke and practice of arithmetike.* London. 1561.
- RECORDS OF THE GOVERNOR and company of the Massachusetts Bay in New England. Edited by Nathaniel B. Shurtleff. Boston. 1853.
- REEDER, R. R. *The historical development of school readers and of the method of teaching reading.*
- ROBERTSON, WILLIAM. *The history of the reign of Charles the Fifth to which is prefixed a view of the progress of society in Europe.* 3 volumes 1770.
- ROSENKRANZ, JOHANN KARL FRIEDRICH. *The philosophy of education.* Translated from German by Anna C. Brackett. New York. 1886.
- SAVAGE, JAMES. *Genealogical dictionary of the first settlers of New England.* Boston. 1861.
- SCHWAB, JOHN C. *The Yale College curriculum. 1701-1901.* Reprinted from the *Educational Review.* New York. 1901.
- SEELEY, LEVI, PH. D. *History of education.* New York. 1899.
- SEWALL, SAMUEL. *Diary. 1674-1729.* 2 volumes. *Collections of the Massachusetts Historical Society, volumes 5 and 6.* Boston. 1878.
- SIBLEY, JOHN LANGDON. *Biographical sketches of graduates of Harvard University, in Cambridge, Massachusetts.* 2 volumes. Cambridge. 1873.
- SMALL, WALTER H. *The New England Grammar School, 1635-1700.* *School Review, Volume X, No. 7.*

- SMITH, DAVID EUGENE. The teaching of elementary mathematics. New York. 1900.
- STILES, EZRA. The literary diary of Ezra Stiles. Edited by F. B. Dexter. 3 volumes. New York. 1901.
- STOW, JOHN. A survey of London. Edited by Henry Morley. London.
- STUBBS, JOHN WILLIAM. The history of the University of Dublin from its foundation to the end of the eighteenth century. Dublin. 1889.
- SWAINSON, C. A., AND WRATISLAW, A. H. *Loci communes*. London. 1848.
- TAYLOR, REV. JOHN L. A memoir of His Honor Samuel Phillips, LL. D. Boston. 1856.
- TRANSALLEGHENY HISTORICAL MAGAZINE, THE.
- TUER, ANDREW W. History of the horn-book. London. New York. 1897.
- UNIVERSITIES AND THEIR SONS. Edited by Gen. Joshua L. Chamberlain. 6 volumes. Boston. 1898.
- VIRGINIA MAGAZINE OF HISTORY AND BIOGRAPHY.
- WADDINGTON, CHARLES. *Ramus (Pierre de la Ramee) sa vie, ses écrits et ses opinions*. Paris. 1855.
- WARD, JOHN. A compendium of algebra. London. 1724.
- WARD, JOHN. The young mathematician's guide. Five parts. London. 1758.
- WASE, CHRISTOPHER. Considerations concerning free schools as settled in England. Oxford, England. 1678.
- WATSON, FOSTER. See Bureau of Education.
- WATTS, ISAAC. *Logick*. London. 1751.
- WEBSTER, JOHN. *Academiarum examen*. London. 1654.
- WEST, A. F. *Alcuin*. 1892.
- WHEWELL, WILLIAM. History of the inductive sciences, from the earliest to the present time. 3 volumes. London, 1847.

- WICKERSHAM, JAMES PYLE. A history of education in Pennsylvania, private and public, elementary and higher, from the time the Swedes settled on the Delaware to the present day. Lancaster. 1886.
- WIGHTMAN, JOSEPH W. Annals of the Boston Primary School committee from its first establishment in 1818 to its dissolution in 1855. Boston. 1860.
- WILEY, S. W. Guide to Latin conversation. 1892.
- A thick 18mo. of some 500 pages. Smaller edition, much condensed under another title as thus:—
- [WILEY, S. W.] How to speak Latin.
- WILLIAM AND MARY COLLEGE. The history of the College of William and Mary from its foundation, 1693 to 1870. Baltimore. 1870.
- WILLIAM AND MARY COLLEGE QUARTERLY. Historical magazine. Volumes V, VI, VII. Articles on Education in colonial Virginia by the editor, Lyon G. Tyler. 1897-1899.
- WILLIAM, SAMUEL G., PH. D. The history of medieval education. Syracuse, N. Y. 1903.
- WILLIAMS, S. G., PH. D. The history of modern education. Syracuse, N. Y. 1892.
- WOODWARD, WILLIAM HARRISON. Vittorino da Feltre and other humanist educators. Cambridge. 1897.
- YALE COLLEGE. A sketch of its history with notices of its several departments, etc. Edited by William L. Kingsley. 2 volumes. New York. 1879



















